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HORSEMASTERSHIP, EQUITATION AND ANIMAL TRANSPORT—1937

Note.—The manual should be read in conjunction with
Animal Management.

CHAPTER I

HORSEMASTERSHIP AND MINOR AILMENTS OF ANIMALS

HORSEMASTERSHIP

1. General considerations

1. Horsemastership is the science of the care of the horse under all conditions, in the field or in barracks. It aims at continuously keeping the largest possible number of horses fit for work, and reducing inefficiency to a minimum by the prevention of accidents and illness.

2. The importance of being a good horsemaster should be impressed on every mounted soldier. He should be taught to look upon his horse as his best friend, to study it, to take a pride in its appearance and to look after its wants before his own.

3. He should receive instruction in :—

- i. Watering.
- ii. Feeding.
- iii. Bedding.
- iv. Grooming.
- v. Shoeing.
- vi. Care of the horse when at work in the field or on the march.
- vii. The prevention and cure of minor ailments.
- viii. The fitting and care of saddlery and harness.
- ix. Anti-gas measures.

4. The main secret of success is to study the temperament and constitution of each horse. It is only by so doing that work and food can be properly regulated, and horse and rider correctly suited to each other.

5. The troop leader (or section commander) is responsible to the squadron (company or battery) commander, and the latter to the regimental (or brigade) commander, for the condition of the horses in his charge. Good horse management consists in paying attention to a number of details. The neglect of any of these details may result in loss of efficiency and affect the health and comfort of the animals.

Watering, feeding and grooming should be carried out on a system understood by all ranks, and discipline must be sufficiently high to ensure that, when officers are absent, all duties are performed in a thorough manner.

2. Watering

[See also Manual of Field Engineering, Vol. II (R.E.).]

1. *General instructions.*—In order to facilitate watering arrangements, horse lines should be situated as close to the watering place as possible.

Where several units have to water at one place, a time-table to prevent overcrowding must be arranged.

Every effort must be made to obtain a plentiful supply of good water.

Horses will seldom drink very cold water freely.

Stagnant water should, as far as possible, be avoided, and attention should be given to the cleanliness of the source of supply. Troughs should always be provided, if possible, but, if these are not obtainable, they must be improvised out of any material available.

A horse requires from 5 to 15 gallons of water a day, and, under normal conditions, should be watered four times a day. In hot weather horses should be watered more often. A heavy drink immediately after a feed impairs the digestion and may possibly cause colic; horses should be watered first and fed afterwards.

2. *Watering on the march.*—Every opportunity should be taken to water horses, especially on hot days. Horses will never suffer from being watered when heated unless they are put to fast work immediately or left to stand and get chilled. Horses should be taught to drink from unusual or inconvenient sources such as shallow streams. Bits should normally be removed, and girths should be slackened, before watering.

Horses should not, unless it is absolutely necessary, be walked into ponds or streams to drink, as they foul the water by so doing.

On the march the start should not, unless absolutely necessary, be made too early to allow the horses to be previously watered. If the march is longer than four hours,

or the weather is hot, or the horses have not drunk well before starting, a halt should be made to water. Horses should not be made to move faster than a walk for a quarter of an hour after a full drink. If fast work will be required from a horse soon after watering, he should not be allowed to drink more than six to ten swallows.

Although most horses are disinclined to drink early in the morning, especially in cold weather, every effort should be made to make them drink before starting out in the morning in countries where water is scarce, as this may be their only opportunity. A marked improvement in the habit of horses can be effected with a very few days' practice.

3. Instructions for watering at troughs.—Watering should always be carried out under the supervision of an officer. Bits will always be removed and girths slackened.

Water troughs must be frequently emptied and cleaned.

Kickers should be watered separately.

Shy drinkers may often be induced to drink more by being taken again to the trough by themselves after the other horses have finished.

Any horse with a discharge from the nostrils must be watered in a separate bucket. Buckets must never be filled by dipping them into the water trough.

Horses should not be watered on both sides of a trough at the same time, unless the trough is a broad one.

A man should not lead more than two horses to water; at the watering place he should stand between the two. On no account should horses' heads be tied together. Horses should be formed up in columns of sufficient width to allow one yard for each horse at a trough. No horse will be allowed to leave the trough until the last animal has finished drinking.

A horse requires from five to six minutes to water. It must not be thought that he has finished drinking merely because he lifts his head.

3. Feeding

1. The three guiding rules of feeding are :—

- i. Feed after and not before watering.
- ii. Feed in small quantities and often.
- iii. Do not work horses immediately after a full feed.

All the horses should be fed at the same time; otherwise those without food are extremely likely to kick or bite and disturb and injure others.

2. The standard daily ration allowed at home for horses in permanent or temporary stables is laid down in Allowance Regulations.

Rations are not supplied in fixed quantities in kind, but each squadron (company or battery) commander has the control of a running cash account, the amount placed to his credit being based on the money value of the standard rations at current rates. The squadron, etc., commander has a free choice both in quantity and in kind as regards the items of food which he purchases for his horses, provided that he keeps within the sum allotted to his credit. He can thus make savings by giving short rations at times of year when work is light and can increase his feeds when the horses are likely to be called on to do hard work. He can also purchase special articles of diet, such as linseed, carrots or beans, when required.

With an intimate knowledge of each animal bad doers can be fed at the expense of good doers.

3. *Feeds*.—Horses should be fed at least four times every 24 hours with grain and chaff and twice with hay.

As a horse has a very small stomach for his size he cannot eat much at a time without impairing his digestion. He should, therefore, be fed little and often. Four times a day is a minimum, five times is better.

On the other hand a horse has very large intestines; and bulk is, therefore, a necessity in his food. Horses will thrive indefinitely on grass or hay if not worked too hard, but they cannot keep in health if deprived of hay, chaff or other bulky foods, however much grain they may be given.

Within limits the harder horses work, the greater should be the proportion of grain to hay.

If hard work is expected immediately after feeding, a half feed only should be given.

Horses should be fastened on the short rack when they are fed from mangers and when there are no partitions between stalls.

The following is a good guide as to the distribution of feeds. The first feed should be given as early as possible, in any case before the horse goes out to work or exercise. It may be a small one if the horses will not be out long. The last feed should be as late as possible and should be about equal in size to the second feed, which should be larger than the first or third feeds. Long hay, or chaff, apart from that prepared for mixing with the corn, should be given with the second, and fourth feeds, a slightly larger proportion being given with or after the fourth feed and as late as possible when horses have been bedded down for the night.

4. The following details regarding feeding must be known and understood by all ranks:—

i. *Oats*.—Oats are the best grain to give to horses, though

maize, beans and peas are useful substitutes as part of the ration.

Barley (crushed or parched) can be used as a whole ration substitute for oats.

Oats form more muscle than any other grain, and are by far the best food for fast work. Except for horses with weak digestions, they need not, at home stations, be given crushed, though crushing probably gives slightly more efficiency, as most horses will pass a few grains whole in their dung when fed with uncrushed oats. Maize can be used as a substitute for oats, but a small proportion (2 lb.) of beans or peas, and bran, should be added to balance the ration.

ii. *Chaff*.—Chaff is a most important item of food, and should invariably be given with every feed of corn, about $\frac{1}{2}$ lb. of chaff to 1 lb. of corn. Its action is to dilute the corn, give bulk to the feed and make the horse eat slowly and masticate his food. In the absence of a chaff cutter a man with a heavy knife, or a billhook with a straight cutting edge at the back, and a block of wood as a chopping block can cut up enough chaff for the delicate horses.

Chaff is improved by having a proportion of the bedding straw cut up and mixed with the chaffed hay. Care must be taken, however, not to reduce the quantity of the bedding, by this means, to such an extent as to make the horses disinclined to lie down.

In the absence of chaff one or two handfuls of bran mixed with the corn have a beneficial effect.

iii. *Bran*.—Bran is useful for feeding purposes to give bulk, and for sick horses or those with weak digestions. It may be mixed with the grain in any proportion from one-tenth to one-half of the total feed. To prevent it from being blown out, it may be slightly damped just before being given. There is not much nourishment in it.

Bran mashes are most useful for keeping in order the digestions of horses in hard work and preventing them from getting stale. They act as mild laxatives and are given once a week or once in every ten days, but may be given as often as twice a week if found to suit.

To make a bran mash, place $2\frac{1}{2}$ to 3 lb. of bran in a stable bucket and pour slowly over it enough boiling water to wet it thoroughly, stirring all the time. Then cover the bucket with a blanket, wrapping it well round the bucket so as to keep the heat in. Let it stand half an hour to three-quarters of an hour and feed when cool enough to eat. No grain or chaff should be mixed with the bran (but boiled linseed may, *see* sub-para. iv below), except a handful of oats for horses which do not like bran alone. The water should be boiling

in order to cook the bran properly. Usually the mash is given the last feed in the evening, and salt may be added to it to make it more palatable.

iv. *Linseed*.—Linseed is useful for keeping horses' coats in order and for sick or delicate horses. Either linseed cake or whole linseed is usually fed; the former is liable to adulteration and the latter is therefore preferable. Linseed cake should be crushed before preparing. To prepare for feeding, crushed cake or whole linseed should be soaked in water for 24 hours and warmed up to feed or boiled for at least six hours. When boiling, it should be frequently stirred to prevent sticking to the pot and burning. The water in which linseed is soaked or boiled must never be thrown away, as it contains much nourishment. Half a pound to one pound of the linseed may be given daily the last feed in the evening. It should be mixed with bran, but no chaff or grain should be given with it, as its sliminess is likely to cause the horse to swallow without much mastication.

v. *Hay*.—In feeding hay, it is more economical, if facilities exist, to chaff about 5 lb. of the hay and feed it in large nosebags. Long hay should be well shaken out in one place to collect the seed, which contains much nourishment and which should be collected and added to the chaff set apart for mixing with the corn. Long hay should be fed in hay nets to prevent it from being trodden into the bedding.

vi. *Boiled feeds*.—Boiled barley is useful food for keeping bad doers in condition. It may be given daily up to 2 or 3 lb. to horses doing fast work. Barley may be boiled either whole or crushed. If used whole, it should be soaked for at least 12 hours before being boiled and it should be cooked until the grains squash easily between the finger and thumb. If crushed barley of good quality can be obtained, it is preferable to whole barley and should be cooked until quite soft. The fire should be a very slow one and the barley should be constantly stirred to prevent it from burning.

vii. *Green meat*.—Green meat, such as grass, lucerne, clover, or green wheat or barley, assists a horse's digestion and keeps his coat in good order. 2 to 3 lb. a day may be given to horses in hard work and more to those in light work.

In the winter carrots, turnips, mangolds or beetroot can be used to replace green meat, but they are costly and should be used sparingly at home stations. Whenever opportunity offers, horses should be paraded for grazing. The addition to the ration thus obtained will be most important.

viii. *Salt*.—Salt should be given to horses at a rate of 1 oz. for each horse daily. It is especially valuable when no green

forage is available. It should be dissolved in water (1 lb. of salt to the gallon) and mixed with the feeds.

In stables rock salt should be kept in the manger of every horse.

ix. *Wastage*.—It is essential that animals be given all the food to which they are entitled. The following points should be observed to prevent waste :—

- (a) Feeds must never be spread on the ground. If nose-bags are not used, some other receptacle must be provided.
- (b) Wind will cause loss of hay unless hay nets are used.
- (c) Loss of hay will be prevented if the hay is rubbed over an improvised sieve. The seeds, clover leaves and short hay will fall through the sieve, and can be given as chaff, while hay which does not fall through the sieve can be placed in the hay nets. The sieve can be made with wire, secured to a rough wooden frame, 5 or 6 feet long by 2 or $2\frac{1}{2}$ feet wide, supported horizontally $2\frac{1}{2}$ feet from the ground.
- (d) A tear in a sack may frequently account for a loss of corn. The N.C.O. detailed to draw the forage should always be provided with a spare sack.
- (e) Wherever forage is stored or feeds are made out, a waterproof cover or sheet must be laid on the ground.

4. Bedding

1. The provision of good bedding is an important detail in horse management, as it encourages horses to lie down and thus rest their legs. It also saves their elbows and other parts from injuries caused by contact with hard floors.

Horses should, therefore, be bedded down as much as possible.

2. Dung should be removed as soon as passed, if possible, so as to prevent it from getting trodden into the bedding.

To check wastage, bedding should not be put down until the horses have been groomed ; and, since they often stale as soon as the bed is under them, a handful of the worst bedding may be shaken under the geldings and the back of the stall littered last. The wet bedding and urine can then be removed and a dry bed left.

3. When absorbent bedding such as peat moss or sawdust is used, all the drains should be blocked to prevent it from getting into and choking them.

4. *Wheat straw* makes the best bedding for horses, provided that enough can be supplied to allow of it being frequently changed and thoroughly dried.

To make the bed, the litter should be well tossed so as to lie evenly over the stall, the straws lying criss-cross with one another and not all one way.

Old bedding, when removed from stalls, should be well shaken up, only the short straws and dung being thrown away. In fine weather the remainder should be spread in rows in the open until thoroughly aired and dried. In wet weather it should be spread out under cover in so far as is possible.

In no circumstances should bedding be kept under the mangers where a greedy horse can eat it and whence the ammonia rising from it will be breathed by the horse.

The fresh straw should be well mixed with the old bedding before being put down.

Oat straw is not so durable as wheat straw and is more likely to be eaten by the horses.

Barley straw is unsuitable for bedding as the awns on the ears may irritate the skin and cause colic if eaten.

Rye straw is the most durable of all, but is expensive.

5. *Dry grass bedding* should be treated in the same manner as straw.

6. *Peat moss* makes excellent bedding, being comfortable and economical. When this is used, horses can be bedded down more freely than with straw. Special attention must be paid to cleanliness as, since the moss deodorizes urine, foul bedding cannot be detected by the smell, and, if allowed to remain, may cause eruption on the skin or rotting of the horn of the feet.

7. *Sawdust* may be used for bedding, but owing to its liability to rapid fermentation it cannot be employed unless the supply is ample. In any case only sawdust from well-seasoned wood is suitable, green sawdust becoming hot as soon as it is pressed together in the bed and soiled by urine. Soiled portions must be removed very frequently and the whole turned over and aerated daily. If these precautions are not taken, it will soon become hot and full of maggots.

8. *Sand* is unsuitable for use as bedding, more particularly in damp and cold climates. In hot climates, however, its use is sometimes unavoidable, but great care must be taken to prevent the horses eating it and getting sand colic. The use of muzzles is probably the most effective means of preventing this.

5. Grooming—General

1. Good grooming is just as important as good feeding to the condition of the horse.

A horse in work must be groomed regularly to keep the

pores of the skin open and free from scurf and dirt. Every horse should be groomed at least once a day. It is a fallacy to imagine that animals on active service and in the open require no grooming.

Without proper grooming the sweat glands cannot act efficiently, the horse's skin will become unhealthy and disease germs are likely to collect. A thorough grooming once a day will keep a horse in health, but to obtain the best appearance a horse should be groomed twice a day.

2. Recruits should be taught grooming systematically, just in the same way as they are taught other items of their work. They must be instructed how to put their weight on to the horse and to groom in a strenuous and workmanlike manner with the jacket off and sleeves rolled up, braces off the shoulders, the object being to clean the horse both thoroughly and quickly. Spurs should always be removed.

No horse is groomed properly which is not groomed quickly ; a good man should groom a horse thoroughly in half an hour unless the horse is particularly dirty.

3. The regulation utensils are :—

1 *body brush*, for cleaning the horse.

1 *curry comb*, for cleaning the body brush.

1 *rubber*, for finishing the horse.

1 *sponge*, for cleaning the horse's eyes, lips, nostrils and dock.

All the above utensils should be considered as being part of the man's equipment and not that of the horse, except in cases when horses are isolated on account of infection.

Besides the above, the following will be found useful :—

A *dandy brush*, for removing dry mud or dry sweat.

It is too hard to use as a body brush.

A *water brush*, for washing the feet, manes and tails.

A *mane or tail comb*, which should only be used by selected men, as it is liable to damage the hair.

A *wisp*, for massaging and finishing a horse.

6. Details of grooming and care of the feet

1. *Pick out the feet*.—This should be done at the beginning of every stable hour and whenever a horse returns to stables after being out for any purpose. The object of it is to remove any stone that may have lodged between the frog and the shoe and to remove damp dirt which might cause *thrush* (Sec. 14, 2, xxii). Special attention must be paid to the cleft of the frog, the sides of the frog and round the inside of the shoe.

The pick of the clasp knife is supplied for this purpose, but any strong iron spike or hook will serve. The point should be filed off blunt. It must not be used with any more vigour than is absolutely necessary and the point must not be forced down the sides or cleft of the frog. When used between the frog and the shoe, it should be drawn from the heel in the direction of the toe.

2. *Dry the horse.*—A wet or sweating horse should be walked about outside for a quarter of an hour to allow him to dry off and should not be brought into the stable unless this is absolutely unavoidable.

If a horse is brought in wet, he should be dried as soon as his feet have been picked out and before any attempt is made to clean him.

To dry him, rub against the lay of the coat with a handful of loose straw or hay, which must be constantly renewed. The most important parts are the belly, flanks and heels. Then dry the jowl, and also the ears by pulling them gently through the hands from base to apex. Brush the legs when dry.

3. *Sponge.*—When the horse is dry, he should be cleaned. Sponge his eyes, lips, nostrils and dock in the above order. The sponge must be continually rinsed in clean water, and especially after being finished with for the day.

4. *Brush.*—After a horse has been sponged, he should be brushed. A horse may be wet with sweat under the saddle and at the same time reasonably dry on the remainder of the body. In this case a beginning may be made with the legs, leaving the saddle on with girths undone or covering the back with a folded blanket. If the back is dry, the legs will usually be cleaned last.

In no circumstances should a wet back be left uncovered unless it is actually being groomed.

To clean the body, begin at one side of the neck immediately behind the ear and brush out the coat with the body brush, using the brush with a circular stroke for the most part in the direction of the lay of the hair. The brush may be used against the hair if there is much scurf or hard dirt.

The man should stand well away from his horse and, with a stiff arm, force the bristles through the coat by leaning the weight of the body against the brush. The brush should not be brought down with a bang on the skin, especially if the horse is ticklish. The left hand should do most of the work on the horse's near side and vice versa.

When grooming the lower part of the flanks and most of the belly, the man should face the horse's tail and use

the hand nearer to the horse, back of the hand down, elbow up.

When grooming the croup, he should hold on to the tail, and, when grooming in under the hind legs, should grasp the hamstring with his spare hand.

Having completed one side he should do the other in the same manner.

He should then groom the head. He turns the horse about in the stall, slides the head collar back on the horse's neck, places the spare hand on the horse's face well above the nostrils and starts very gently with the brush, coaxing the horse until he lowers his head and so enables him to do well up round the ears. If the head is lowered sufficiently as in the case of a trained horse, the spare hand can be transferred from the face to the ears. He should never grasp the horse's ears if he can avoid it, as this may make him shy about the head.

He then turns the horse round again and cleans the tail. The hair should be parted and the roots brushed out with the body brush lock by lock. The dandy brush or comb should be used carefully if used at all; otherwise they will break the long hairs and spoil the tail by making it thin at the bottom.

Tails should only be pulled by men who are expert at the work, and scissors or shears should never be used, except to trim the ends.

5. *Curry comb*.—The curry comb is used for cleaning the brush and should not be applied to any part of the horse. It should be carried on the back of the hand so as to enable the man to lean his hand against his horse if necessary. Frequent use of the curry comb on the brush is not necessary. The dirt must be knocked out of the curry comb by tapping the latter on the ground behind the horse in a place from which the dirt can be swept away. Dirt must not be blown out or tapped out on mangers, or where it is liable to contaminate forage, etc.

6. *Wisp*.—The chief use of the wisp is to massage the horse's body, thereby raising muscle, refreshing a tired horse, and improving the coat.

It must be carried out very vigorously after the horse has been cleaned and is usually best done by all the men at the same time under orders for 5 to 10 minutes. The wisp should be brought down with a bang on to the skin in the direction of the hair all over the body.

To make a wisp, twist hay or straw into a rope 8 to 10 feet long. Form two loops at one end and then twist the rope

over and under each loop alternately, finishing up by passing the end through one loop. (Figs. 1 and 2.)

7. *Rubber*.—Polish the horse's coat with the rubber, which should be slightly damped and used like a wisp.

8. *Hand rubbing*.—This is an excellent form of massage and is especially useful for removing long or loose hair and for drying the horse's back after removing the saddle. The hands are slapped down smartly on the body one after the other and the weight of the body is leant upon them. The forearms should be used as well as the hands for rubbing the horse with a firm pressure, which should be done both against the direction of the lay of the coat and with it. If it is desired

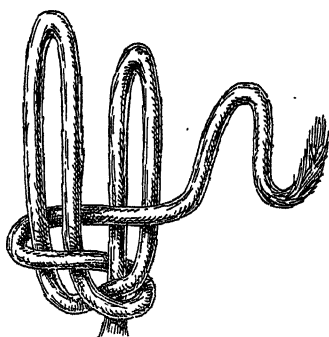


FIG. 1.

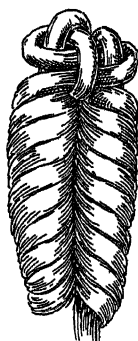


FIG. 2.

to remove loose hair, the hands and forearms should be kept slightly damp.

The legs below the knees and hocks, should be hand-rubbed every day in an upward direction. This facilitates the action of the veins and lymphatics and prevents a horse's legs from becoming "gummy."

9. *Washing*.—The sheath must be washed occasionally with soap and water (not soft soap). Horses which do not draw the "yard" when staling usually require more washing than others.

The feet may occasionally require washing to remove dung before the horse goes out. This should always be done outside the stables, care being taken not to wet the hair of the legs or heels.

Washing a horse's legs should not be permitted as a rule, but for appearance's sake a white leg may occasionally be washed. Soap and cold water should be used and special

care must be taken to rinse all the soap out of the hair. The leg must be thoroughly dried. Warm water must never be used. Heels left damp are a frequent cause of "cracked heels".

10. *Clipping*.—For horses required to work hard in the winter, clipping is essential. A clipped horse is capable of a greater amount of work with less distress and is cleaned with much less labour than an unclipped horse. An unclipped horse, after sweating, takes a long time to dry and runs a great risk of catching a chill. For these reasons army horses in winter should be clipped.

Normally, horses in Great Britain should first be clipped as soon as they have their winter coats; this will usually occur during October. After the first clipping the horse must be reclipped from time to time according to the growth of his coat. This varies considerably with individual horses. The later the first clipping is carried out, the less often subsequent clipping will be necessary, as the hair grows less rapidly.

A commanding officer will exercise his discretion with regard to the clipping of horses' bodies. Except in the case of heavy draught horses, legs may be clipped out the first time over, but, subsequently, will not be clipped below the elbow and stifle. Heels should be neatly trimmed with scissors; clipping machines will not be used for this purpose, except when the legs are clipped.

It must always be remembered that the necessity for clipping depends on (i) climate, (ii) work, (iii) the horse's coat, and therefore officers on whose discretion the clipping of horses depends must decide when and how often clipping should be carried out or whether it should be whole or partial.

Horses, once clipped, must be provided with clothing; otherwise they will lose condition from cold.

The fitting of the rug is important. The neck opening should not be too large, or the rug will work back over the shoulders until the top is drawn tightly across the withers and may cause a sore from pressure.

For clipping and clothing *see* Animal Management.

7. Shoeing

1. *Supervision of shoeing*.—Faulty shoeing is often the cause of preventable foot injuries and ailments. Troop or section commanders must therefore satisfy themselves by personal supervision that their horses are properly shod, and the farrier must carry out a daily inspection of all horses' feet.

2. *Inspection of a newly-shod horse.*—As soon as a horse is shod, the troop or section commander should inspect his feet and note the following points :—

i. When the foot is on the ground :—

- (a) Clenches are even, flat and broad and not too high or low, and have not been driven into old nail-holes.
- (b) No rasping of the wall.
- (c) No dumping of the wall.
- (d) Clips are low and broad.
- (e) The shoe fits the foot.

ii. When the foot is lifted off the ground :—

- (a) Nails are driven home.
- (b) No unnecessary paring of sole or frog.
- (c) The heels are level in height and not opened out.
- (d) No daylight between foot and shoe or uneven bearing.
- (e) The shoe is properly finished off.
- (f) The shoe fits the foot ; particularly, the heels of the shoes are not too short.
- (g) The shoe does not interfere with the functions of the frog.

iii. Signs of lameness, which may be detected by trotting up the horse.

3. *Rate of wear.*—The rate of wear of shoes varies, but they should be replaced as worn out. No animal should be allowed to go over one month without re-shoeing, the feet being lowered, and either a new set of shoes put on or the old shoes re-applied (termed a "remove").

4. *Mules' feet.*—It is a common fault to allow the feet of mules to grow too long.

5. *Picked-up nails.*—Picked-up nails may be the cause of very serious injury. Horses are specially liable to pick up nails when working over ground which has been occupied by troops for some time, in the neighbourhood of camps or on roads where supply or refilling dumps are situated. All nails found lying about must be collected and placed in special receptacles.

8. Health, condition, exercise, etc.

1. *Health.*—The following are indications of good health : head alert, eyes bright, ears pricked, appetite good, body well furnished, skin supple and bright, and droppings fairly firm and not slimy.

Horses which are thin, out of condition or short of exercise are difficult to keep clean.

It is natural for a horse to rest a hind foot but not a fore foot. The latter is known as "pointing" and indicates trouble in that leg.

2. *Condition*.—A horse is said to be in condition when he is physically fit to undertake without strain the ordinary work which he may be required to perform. Such condition can only be secured by a gradual process of preparation and attention to detail.

Horses, particularly remounts, should be brought on gradually at their own work. No horse can be in too big a condition, provided that he is not soft and has not run to belly.

3. *Exercise*.—A horse requires from two to three hours' exercise a day. When trotting, it is important to start very slowly, and never to exceed eight miles an hour.

An officer should attend exercise parties. A distance of 20 yards should be maintained in rear of every 18 pairs of animals, and the leading pair of each party should be made responsible for maintaining a steady pace at the head of their party. If available, a N.C.O. should be detailed to take charge of each party, and normally should ride in rear of his command. A N.C.O. must invariably be detailed to ride in rear of the rear party to prevent straggling.

The officer or N.C.O. in charge of the exercising party must ride where he can see what is going on. Exercising parties should be properly turned out and men must be made to sit up and ride properly. Exercise gives a favourable opportunity to teach horses to walk out.

4. *Thin horses and their treatment*.—Every thin horse must be treated as a special case and the cause of his lack of condition removed, if possible.

Thin horses should be kept on separate lines and special men should be detailed to look after them.

Placing them in loose boxes will often be found beneficial.

Nervous horses or slow feeders should be kept by themselves. Thin horses must be fattened gradually and given such delicacies as may be available. Merely increasing their oat ration may do more harm than good. They should be given plenty of soft food. For horses in very low condition complete rest will often effect a cure.

9. Care in stables—Miscellaneous

1. *Injuries*.—Men should notice and report the least signs of any injury to their horses.

2. *Securing horses in stables.*—The head collar should be properly fitted and the animal secured by the head rope or chain, passed through the manger ring or hole and fastened to the log, which should be sufficiently heavy to keep the rope or chain taut. The proper length for a head rope or chain is the distance from the lower ring of the jowl piece of the head collar to the ground when the animal is standing with head erect.

Neglect of these methods may lead to galls caused by the animals getting their legs over the rope or chain. The fastening to the log should be made in such a way as to afford easy release.

Pillar reins or chains are attached to the back of the stall posts and are very useful for cribbers and wind-suckers, or for the accommodation of horses which it is not desired to feed.

3. *Sweating in stables.*—Some horses are inclined to break out into a sweat after they have come into the stable. This is usually a sign of weakness, for which these horses should be treated.

Such horses should be carefully watched and dried again to prevent them from getting chilled and losing condition. The tendency may be reduced by allowing only a small drink of water until the horse has obviously settled down, and by giving him hay to eat as soon as he comes in.

In bad cases a little straw may be placed on the horse's back and a saddle blanket thrown over the top, the horse being left alone for half an hour.

4. *Staling.*—A tired horse should be made to stale on arrival in stables, if possible, and, if he has not staled while out, shake some clean bedding under him, stand away from him and whistle and wait.

5. *Rolling* helps to settle down and dry a tired and sweating horse. It also helps to clean the skin. Dry sand or dust sprinkled on the back may induce a horse to roll. Many horses will roll immediately on being taken to a "sand bath." This should have an area not less than 15 feet by 15 feet and a depth of sand not less than nine inches.

6. *Washing horses.*—The washing of horses as a general practice is to be strongly condemned.

7. *Washing brushes.*—It is occasionally necessary to wash brushes to get rid of accumulated grease or to prevent the spread of disease. The back should be scrubbed with soap and water, and wiped dry. The bristles should then be lightly dipped in a strong, hot solution of soda in water until free from grease; or the brushes may be stood with the bristles in a

strong solution of soda and water, the backs not being immersed. After being cleaned, and before they are dry, the bristles should be re-hardened by being dipped in strong brine. The brushes should then be stood, bristles downwards, to dry.

8. *Washing rubbers.*—Rubbers should be washed frequently.

9. *Cleaning mangers.*—Mangers must always be kept clean, any uneaten food being removed to prevent it from turning sour and tainting fresh food. Mangers should be scrubbed thoroughly once a week.

10. *Quiet.*—All ranks should be impressed with the importance of keeping the stables quiet for as long a period as possible.

In places where the existence of saddle or harness room permits the men to leave the horses alone in the stables, the use of peat moss litter will allow of horses being bedded down and the stables being left absolutely quiet for one or two hours in the middle of the day. This encourages horses to lie down and rest and the practice should be adopted whenever possible.

11. *Ventilation.*—In order to keep horses healthy, stables must be ventilated. Without ventilation the atmosphere becomes impure and, although the horses outwardly may appear thoroughly healthy, they are less fit to undergo hardship or withstand disease than those living in well-ventilated stables.

All ranks should be taught the necessity for ensuring that the means of ventilation are regulated both by day and by night.

The air of a stable should be changed often enough to keep it pure, without allowing a draught. Draughts are dangerous and must be prevented.

The following are the means of ventilation :—

- i. *Inlets.*—Doors, windows, air bricks and tubes.
- ii. *Outlets.*—Louvre-boards, cowls and shafts.

Doors are valuable additions to ventilation, but can hardly be regarded as means, as they usually must be kept shut. They should, however, be kept open as much as possible when the stables are empty, so that the floors may be well aerated.

Windows are the main inlets for fresh air. They should be arranged along both outer walls and hinged from the lower edge or centre so as to open with an inward and upward slant. The windows to leeward should always be kept open, and in calm weather those on both sides. The current of air striking the inward and upward slanting window is thrown up over the animals standing beneath, and, as it is cooler and therefore

heavier than the rest of the air in the stable, it will descend and be spread about, being somewhat warmed before it reaches the animals and so a draught is avoided.

Air-bricks are placed under the manger about one foot from the ground.

Louvre-boards are fitted under the ridge of the roof and act as outlets for heated foul air.

Ventilating cowls and tubes are usually fitted where there are overhead rooms, or where louver-boards do not exist.

10. Care of the horse when at work in the field

1. Men should notice and report the least signs of any injury to their horses. A small lump on the horse's back, if noticed in time, can generally be relieved at once by altering the fold of the blanket, or by changing the saddle or rider. If nothing is done and the horse worked as before, a sore back will result in a few hours. A loose shoe should be attended to at once. A tired horse may brush, but if, on the first signs of this happening, a brushing boot is fitted, the horse can be kept at work until there is time for the shoeing, if necessary, to be altered.

2. Sufficient time should be allowed each morning for the men to saddle up carefully, but on no account should horses be left with their saddles on an unnecessarily long time before starting.

3. When clothing is worn at night, horses should not be unclothed in the morning a moment earlier than is absolutely necessary.

Standing exposed in the early morning awaiting a start is a fruitful source of chills and loss of condition.

4. Opportunities for giving the horses a small feed at frequent intervals and for giving them grazing, even a few mouthfuls, should never be neglected. Although bits should always be removed for feeding with grain, and if possible for grazing, it must be remembered that a horse can eat grass quite easily with the universal bit in his mouth, although he cannot do so with a double bridle.

Even when marching at an early hour a small feed should always be given before starting.

5. Hay is very liable to wastage by being blown about by wind, and corn may escape from faulty feed bags or be shaken out by the horses. No more bales of hay should be broken open than are absolutely necessary, and only small quantities should be placed before the horses at a time. Forage should not be left exposed to bad weather.

6. A halt should always be made half to a quarter of an hour after starting out from the stables or picket lines, and horses should be encouraged to stale.

This opportunity should be taken to look round the saddlery, harness and equipment for anything likely to chafe the horses or to get lost. If a start has been made before daylight, this precaution is more especially necessary. A badly folded or shifted blanket and an ill-secured feed bag are among the commonest causes of damage and loss.

7. Even the lightest man is a heavy burden on a horse's back, and every opportunity should be taken to dismount even for a very short time. Loosening the girths at the same time will ease the continual pressure round the body, and slightly moving the saddle about will ease the back by relieving pressure and facilitating the circulation.

When moving at the walk, men should frequently dismount and lead their horses, especially when going downhill.

8. Saddles should be removed once during the day, if possible, particularly after a long march, when the backs should immediately be given a good hard hand-rubbing to prevent chill and to restore the circulation which has been weakened in the skin of the back by the pressure of the saddle. Lack of circulation owing to continual pressure is one of the main causes of sore backs.

9. Heavy or stony ground should not be covered at a fast pace, and it may often be quicker to make a detour to a place where the going is good. This must not, however, deter men from fast and fearless riding over obstacles when occasion demands. Galloping fast into ground which suddenly becomes heavy should be specially avoided, as it is liable to cause over-reaching.

10. During the last 15 or 20 minutes of a march men should be dismounted and lead their horses at a walk so that they can reach their billets or picket lines cool and dry. Grooming will be much facilitated by this procedure, and liability to chills will be avoided.

11. Picket lines

1. The main considerations in the quartering of horses are that they should be near water, on firm ground, protected from the prevailing wind and close to the men's billets. Concealment from observation from the air is of vital importance. A slight slope is desirable in order to facilitate drainage.

To escape detection from the air, regular formations in the

open must be avoided, and, whenever possible, picket lines should be sited along the edges of woods, under rows of trees or under hedgerows (*see also* Sec. 13).

In order to minimize casualties from bombing from the air, traverses should be built as soon as possible, or advantage taken of any protection afforded by walls, banks and sunken roads. If time is limited and no natural cover is available, horses will be picketed in small groups well separated.

2. *General*.—A horse, when picketed, requires a frontage of about five feet and a distance of about 12 feet.

Except in very hot weather, horses will be picketed in lines facing away from the prevailing wind, with intervals of five yards between the heel pegs of one line and the head pegs of the next line, to allow of a gangway. When sufficient space is available, this interval may be increased to nine yards, four yards being allowed to admit of the horse being swung round on his heel peg on to new ground facing in the opposite direction, and five yards as a gangway. When the additional four yards interval is available and the ground is to be occupied for more than one night, half the head pegs should be used to secure the built-up rope, and the other half to mark its alternative position. On bad-holding ground all the head pegs should be used to secure the built-up rope.

Five yards should be maintained between a horse line and the nearest tent peg, building or wall.

3. *Methods of picketing*.—Picketing may be either on an air-rope breast high, secured between wagon wheels, trees or posts, or on a ground-rope secured by means of picketing pegs, in which case heel-pegs must be used. The former is by far the best method. The rope in both cases should be strong and well secured, and kept taut. Picketing by single pegs is objectionable, unless the head ropes are kept short and heel ropes are also used. Single horses or kickers are best picketed by means of a shackle on the fore fetlock secured to a peg by a rope one foot to 18 inches in length.

4. *Head-ropes*.—For animals on a ground line the head-rope must be just long enough to allow the head to be held in a natural position over the line. On a breast line it must be of sufficient length to admit of the animal getting his head to the ground.

5. *Heel-ropes*.—When heel-ropes are used, horses should be tied sufficiently far back to prevent them from getting their fore feet over the head-rope.

6. *Picket-line sentries* will be posted. Their duties are :—

- i. To watch the horses while feeding in order to see that feeds are not spilt, and to remove nose-bags as

soon as the horses have finished feeding. For this purpose the stablemen will continually walk up and down the lines. On no account must they be allowed to clean their saddlery and harness during their tour of duty.

- ii. To keep the head and heel ropes tied up at the proper length.
- iii. To shorten up the nose-bags of any horses that are tossing them up.
- iv. After feeding, to collect the nose-bags (and turn them inside out).
- v. To note and report horses off their feed.
- vi. To keep hay nets and hay in the proper position for horses to eat with comfort, and to prevent the hay from being trampled on.
- vii. To remove droppings and keep the lines clean.

7. Saddlery and harness will be placed in gangways (Sec. 28); forage at the rear ends of the horse lines, unless suitable cover is available.

If horses are unaccustomed to picketing, an adequate number of line guards should be posted to prevent stampedes.

8. Before a mounted force reaches the ground where it is intended to camp or bivouac, a party should be sent ahead to mark out the ground. The ends of the horse lines of each troop or section should be marked by flags, small sticks stuck in the ground or small heaps of stones, so that no time may be wasted when the troops arrive.

9. On the arrival of the force each unit should be halted just outside the area marked out for its horse lines. Then acting independently, each unit should lay its lines down in a methodical manner. The following procedure, in the case of a troop, is suggested :—

- i. Dismount and ground arms clear of horses. The Nos. 3 may hold the horses, their arms being placed with the remainder, or the horses may be coupled.
- ii. Remove picketing gear from the saddles, the Nos. 2 taking that of the Nos. 3, and move to the ground marked out for the horse lines.
- iii. Drive in a double peg at the flag, stick or stones marking one end of the troop line, and put the built-up rope together, passing it through all the other head peg loops.
- iv. Fasten the rope to the double peg at the end of the line, and stretch it out in the direction of the other flank flag, then drive in the pegs at equal intervals along the line.

- v. Lay down the heel pegs and heel ropes, Nos. 2 being responsible for those of Nos. 3.
- vi. Lead the horses in single file on to the lines. Each man halts opposite the ring of his own piece of built-up rope, unfastens the head-rope and ties it to the line with a *clove-hitch* and a *draw loop*, first passing it through the ring of the built-up rope.
- vii. Fasten the shackle round the horse's hind leg below the fetlock with the buckle outside (change the leg frequently). Drive in the heel peg (they must not be dressed) so that the horse will stand as directed below with the heel rope taut, and then secure the end of the heel rope to the loops of the pegs with two half-hitches. When the horse is

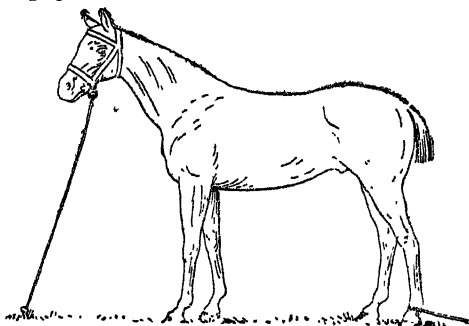


FIG. 3.

picketed, the head-rope should be sufficiently long to allow his head to be in its natural position when the horse is standing perpendicular to the picket line, but no longer. (See *rope galls*, para. 10 below.)

10. *Rope galls*.—In Fig. 3 the horse is shown tied up correctly, the head brought over the picket line and sufficient length of head-rope allowed to enable him to look about freely.

In Fig. 4 the effect of a long head rope is seen. The horse in moving about has got his heel over it. In this position the animal works its leg up and down on a taut rope, and in a few seconds may cut through the skin and inflict an injury requiring a considerable time to heal.

11. *Standings*.—To shelter horses from wind and to keep them out of the mud are the main objects to be considered

in selecting sites for, and designing plans for, horse standings. They should be sited close to metalled roads and good approaches to them should be made. Drainage should be

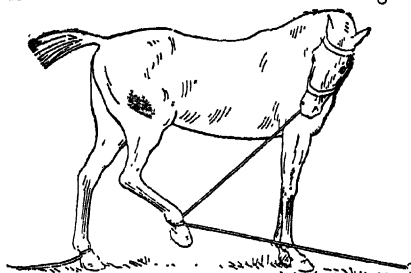


FIG. 4.

carefully attended to and the floors improved with any hard material available. Anti-bomb traverses, when necessary, should be made as thick as circumstances permit and carefully revetted. If made sufficiently high, they also act as efficient wind screen (*see also* Sec. 13, 6, iii. (b)).

12. Securing horses

1. *Tying up a horse.*—In securing a horse by the reins or head-rope to a tree, bush or fence, he should be tied so that he cannot injure himself or break his reins by treading on them.

The knot used should be capable of being tied and untied quickly, and should not become unfastened if the horse

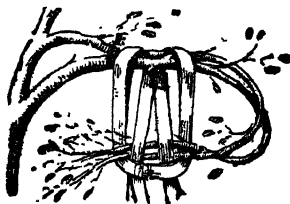


FIG. 5.

becomes restive. The following is a useful method for securing a horse to a bush or small tree.

Take a suitable branch or bunch of branches, place the loop of the reins under and round it, then double back the end of the branch, breaking it if necessary, and pass it through the reins and tighten up. A piece of stick will answer the same purpose. (Fig. 5.)

Horses should never be tied direct to valuable trees, such as those in an orchard, as damage may be caused thereby.

2. Single horses can also be kept from straying, as follows :—

- i. By securing the bridoon rein to the girth on the near side :—The cheek reins are taken over the head in the usual way and passed under the girth from front to rear. They should then be drawn sufficiently tight to bend the horse's head to the left and fastened by a single hitch, made without drawing the free end through. (Fig. 6.)

When mounting in haste, the rider can easily loosen the slip knot after mounting, and then pull the reins clear and pass them over the horse's head.

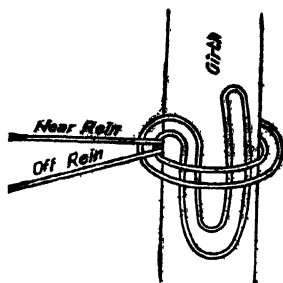


FIG. 6.

- ii. By securing the bit to the stirrup iron by means of the rein or a strap.
- iii. By knee haltering :—One end of a rope is made fast above the knee by a clove hitch, fairly tight, with a keeper knot (half-hitch) round the rope to prevent it from becoming loose. The other end is then tied to the lower ring of the back strap of the head collar and so secured that the horse cannot tread on it. The rope should be from one foot to one foot six inches from the knee to the head collar.
- iv. By being hobbled above the knees by a rope or leather thong tied round in such a way as to prevent the horse moving one foot in advance of the other.

3. *Coupling horses.*—Horses can be securely coupled by turning them head to tail and tying each with the bridoon rein to the off back-strap or arch of the saddle of the other, care being taken that the reins, when tied, are not more than six to eight inches long. (Fig. 7.)

With three horses, one can be tied to the head collar of either of the two horses so coupled. Four horses are secured by tying a horse to each of the two originally coupled. No horse should have more than one foot length of rein, and the best knot to use is a slip knot round the rein itself.

4. *Linking horses.*—The head ropes are brought over the horses' heads clear of the reins, without unfastening the coil



FIG. 7.

or knot. Each man hands his rope to the man on his right, who passes it through the upper ring of his own horse's head collar, and ties it with two half-hitches.

5. *Ringing horses.*—The reins are taken over the horses' heads, and the flanks of the troop are brought forward until the horses are in a ring. The surcingle or stirrup leather of the right hand man is then passed through all the reins and fastened.

13. Anti-gas measures

1. The general principles laid down in Defence Against Gas apply with equal force to transport animals. They are susceptible to all forms of poison gas with the exception of the lachrymators (tear gas).

2. *Blister gas.*—This gas, either in the form of liquid or vapour, attacks any part of the animal with which it comes into contact. The horn of the hoof, including the frog, is, however, sufficiently resistant to protect the sensitive structures of the foot.

3. *Symptoms.*—

i. *Liquid.*—Drops, as from aircraft spray, falling on the skin cause the hairs in the vicinity of the drop to stand erect and after an hour a localized swelling appears. This swelling is tender to the touch and subsides in four or five days to leave a thickened, wrinkled area of skin which finally separates and leaves a sore. Heavier splashings cause earlier sloughing of the skin and leave a deep, suppurating sore. A drop no bigger than a pin's head falling in the eye causes serious injury and may result in blindness. Eating contaminated

forage causes serious injury to the mouth, stomach and intestines.

ii. *Vapour*.—Injury is caused to the skin by vapour from drops of the liquid falling on harness, blankets or rugs. These injuries resemble those caused by the liquid drop, except that they are wider in extent but are not so deep. Exposed to vapour, the eyelids swell, tears run down the face and later a thick discharge issues from between the eyelids. Inhalation of the vapour causes spasms of coughing and a profuse nasal discharge.

4. *First aid treatment*.—A very slow rate of healing is characteristic of mustard gas injuries and first-aid treatment should be employed to lessen the injury and so shorten this healing time. The success of such early treatment will depend on the *speed* with which it is used after exposure; the best method being that which can be most quickly applied. Before beginning treatment attendants should put on protective clothing with gloves and the respirator.

i. Remove gear and fix the tail.

ii. If the affected parts are localized and can be detected, anti-gas ointment No. 1 should be well rubbed into the skin and wiped off after five minutes. It will be beneficial if this treatment can be followed as soon as possible by washing with hot water and soap.

iii. If the area is large or cannot be accurately defined—
either

(a) scrub vigorously with soap and water, using a body brush for the purpose; rinse with frequent changes of water;

or

(b) smear the animal all over with a paste made with equal parts of bleaching powder (chloride of lime) and water, care being taken to avoid the eyes, nostrils and lips. *This paste is very irritant to the skin and should not be left on any part longer than five minutes.* It is removed by vigorous washing.

iv. Affected eyes should be frequently bathed with water or with a solution of common salt or bicarbonate of soda in water, one teaspoonful to the pint. It is necessary to use some form of restraint in order to carry out the bathing thoroughly. An eye-shade should be improvised from cloth and secured to the head collar.

v. If the respiratory tract is involved, the patient should be kept quiet and fed from the floor. This helps the nasal discharge to come away and prevents accumulation.

vi. If animals are known to have eaten contaminated forage, a liberal diet of clean forage should be given and water frequently offered in order to absorb, envelop and dilute the poison. Later the diet should be of a light, laxative nature, *e.g.* green food, bran mash and boiled feeds.

vii. Contaminated harness and saddlery should be marked and set aside for decontamination, and forage contaminated with liquid mustard gas will be destroyed.

5. *Prevention.*—

i. As mustard gas may be projected from the air, it is important to seek shelter. Advantage should be taken of woods, barns, stables and the lee side of buildings. Blankets and rugs, etc., should be used and removed as soon as possible. Mustard gas penetrates the service horse rug in 20 minutes.

ii. Avoid contaminated areas.

iii. Prohibit grazing on suspected pasture. If halted on such areas, put on nosebags.

iv. No watering from stagnant pools or shallow ponds in suspected areas. Contaminated troughs should be drained, washed and left to weather.

v. If it is necessary to cross contaminated areas, smear anti-gas ointment No. 2 on the legs, below the knee and the hock joints, paying particular attention to the fine skin of the hollow of the heel, and ~~move~~ at the walk to avoid undue splashing. This ointment should be wiped off as thoroughly as possible when well clear of the contaminated area. The removal of the ointment should be completed at the first opportunity by washing with hot water and soap.

6. *Choking gas.*—

i. *Symptoms.*—In acute cases slight spasms of coughing may or may not occur, and owing to the delayed action of this poison symptoms may not develop until the 12th to the 24th hour after exposure. Breathing becomes hurried and difficult, the nostrils are widely dilated, the temperature rises and a nasal discharge appears, at first foamy and later becoming thick and blood-stained. Death may occur by the 48th hour.

In milder cases the patient has a general appearance of depression, eyes staring, nostrils dilated, hurried breathing, and a slight rise of temperature. Recovery takes place in four to six days.

ii. *First aid treatment.*—Gassed animals should be moved slowly, with frequent rests, to a place of safety. Excessive movement or the lightest work will aggravate their condition.

and may lead to death. If ambulance transport is available, it should be used. Harness and saddlery is removed and the patients should be kept in the open air. Further treatment will be undertaken by the veterinary officer, who will decide whether the case should be evacuated.

iii. *Prevention.* (a) *Stables.*—A very real measure of protection is gained by gas-proofing the stable. The principle laid down in Defence Against Gas for gas-proofing rooms should be followed. It is necessary to have the sealing material in the building so that it can be put quickly into operation. Blankets or cloth union, anti-gas, will be used on the inside of windows and doorways. For metal window frames gummed paper strips should be used. Special arrangements must be made for the various types of ventilators, and drainage exits should be stopped. Unlike the gas-proofed room, no overcrowding can take place in the stable and the horses will suffer no ill effect from such a confinement for a time long enough to ensure the dispersal of these non-persistent gases.

(b) *Open standings.*—Horse lines should be sited on high ground or hillsides, or under the shelter of crests. Low-lying valleys, especially those running at right angles to enemy lines, should be avoided, also ground bordering important roads or near cross roads.

7. *Nose gas.*—In ordinary field concentrations horses behave quietly, and apart from snorting and a flow of tears the action of this poison is weak on the larger animals. These poisonous smokes may collect in the horse's coat, which should therefore be cleansed by brushing and washing, both in the interest of the attendant and the animal itself. The respirator should be worn while the brushing is being carried out. No other treatment is required beyond a good supply of fresh air.

MINOR AILMENTS OF ANIMALS

14. Prevention and cure of minor diseases and accidents

1. In order to prevent complications of disease from arising out of apparently simple ailments or injuries, all animals affected should be paraded for veterinary inspection as early as possible.

2. The following table deals with a few of the more common ailments and accidents and should be taken as a guide for action in cases when immediate veterinary advice is not

available. In every case the treatment recommended is within the scope of the "field veterinary chest—unit pattern".

Ailment or injury. Symptoms, causes, treatment.

- i. Bit injuries ... *Places of injury.*—
 - (a) Corners of mouth.
 - (b) Just inside cheeks, near first grinders.
 - (c) The bars.
 - (d) Upper surface or sides or under surface of tongue.

Treatment.—Wash mouth out after every feed and do not put bit into mouth until injury has healed.
- ii. Broken knees ... *Causes.*—
 - (a) Careless riding.
 - (b) Faulty action.
 - (c) Fatigue, especially when not in good condition.
 - (d) Burrs of saddle interfering with movement of shoulders.

Treatment.—See wounds.
- iii. Brushing ... *Symptoms.*—Wound on inside of fetlock.

Causes.—

 - (a) Careless riding.
 - (b) Faulty action.
 - (c) Bad shoeing (clinches or shoe projecting).
 - (d) Fatigue and want of condition.

Treatment.—See wounds; remove cause if due to bad shoeing and put on brushing boot.
- iv. Colic ... *Symptoms.*—Horse looks round at his flanks; tries to lie down and roll; stamps with hind legs; kicks at his belly.

Causes.—

 - (a) Faulty feeding.
 - (b) Swallowing sand either in drinking-water or feed.

Treatment.—Walk horse about; give chloral hydrate ball (1 ounce) and, if not relieved within an hour, give aloes ball (4 drachms); in absence of drugs give half a tumbler of rum or whisky

- Ailment or injury. Symptoms, causes, treatment.
 in 1 pint warm water, or $1\frac{1}{2}$ pints warm beer with a teaspoonful of ginger mixed with it.
 Should the chloral ball be bitten, the mouth should be well washed out immediately with water to avoid blistering the mouth.
 Animals subject to colic should be reported to the veterinary officer.
- v. Constipation ... *Causes*.—
 (a) Prolonged feeding on dry food.
 (b) Indigestion.
 (c) Want of exercise.
 (d) Insufficient water.
Treatment.—Give soft food such as bran mashes and green forage; give regular work.
- vi. Coughs and colds *Symptoms*.—Coughing and discharge from nose and eyes.
Causes.—
 (a) Sudden changes of temperature.
 (b) Draughts when heated or in stables.
 (c) Badly ventilated stables.
Treatment.—Consider contagious; isolate; treat as for fever.
- vii. Cracked heels and mud fever. *Symptoms*.—Heels hot and painful; greasy discharge.
Causes.—Washing legs and not thoroughly drying them.
Treatment.—Dust on boric acid powder, or apply "white lotion" ($1\frac{1}{2}$ drachms acetate of lead and $1\frac{1}{2}$ drachms sulphate of zinc to 1 pint water).
- viii. Diarrhoea ... *Causes*.—
 (a) Overwork.
 (b) Unsuitable food.
 (c) Exposure.
Treatment.—Give dry bran; keep body warm; reduce work if overwork is cause of ailment.
- ix. Discharge from nostrils, eyes or mouth. *Treatment*.—Isolate and obtain veterinary advice. Great care should be exercised in cases where there is a

Ailment or injury.	Symptoms, causes, treatment.
	discharge from the nostrils, as the disease may be glanders, which is communicable to man.
x. Exhaustion ...	<p><i>Symptoms.</i>—Horse lies down; disinclined to feed although unusually thirsty; sometimes considerable sweating although body is cold.</p> <p><i>Treatment.</i>—Give carbonate of ammonia ball (4 drachms); if drugs not available, give 1 pint warm beer or half tumbler rum or whisky in 1 pint warm water; keep body warm with rugs and bandages; feed in small quantities and often with warm bran mashes, steamed oats, boiled linseed, oatmeal gruel.</p>
xi. Fever ...	<p><i>Symptoms.</i>—Temperature over 100·2°; horse off its feed and dull.</p> <p><i>Treatment.</i>—Isolate; keep warm with rugs, bandages, etc.; keep water always available for horse to drink and change it frequently; give plenty of fresh air; bran mashes or scalded oats.</p>
xii. Girth galls ...	<p><i>Symptoms.</i>—Abrasion or swelling.</p> <p><i>Causes.</i>—</p> <ul style="list-style-type: none"> (a) Soft condition of horse. (b) Big belly. (c) Hard condition of girth. (d) Too loose girthing. (e) Too tight girthing (swelling). <p><i>Treatment.</i>—</p> <p>Abrasion. <i>See</i> wounds.</p> <p>Swelling.—Massage, hot-water fomentations.</p>
xiii. Kicks ...	<p><i>Causes.</i>—</p> <ul style="list-style-type: none"> (a) Horses restive just before feed time. (b) Cold nights. (c) Mares in season. (d) Irritation caused by flies. (e) Work in the ranks.

Ailment or injury.	Symptoms, causes, treatment.
	<i>Treatment.</i> —See wounds.
	<i>Note.</i> —A fractured bone should be suspected in the case of kicks on the inside of the forearm or thigh, even though no sign of such is apparent. Stop work and do not allow horse to lie down.
xiv. Lameness ...	Have horses trotted at least once a day, generally when filing out for midday or evening water and observe them for lameness. When visiting morning or evening stables, especially after a long day, feel legs and feet for any undue heat, and parade any such cases as sick.
xv. Mange ...	<i>Symptoms.</i> —Marked skin irritation; horse bites himself and rubs himself against any available object. <i>Treatment.</i> —Isolate and obtain veterinary advice as soon as possible.
xvi. Nettle rash ...	<i>Symptoms.</i> —Small flat swellings suddenly appear in skin. <i>Causes.</i> — (a) Want of work. (b) Overfeeding. <i>Treatment.</i> —Give bran mashes.
xvii. Over-reach ...	<i>Symptoms.</i> —Wound on back tendon or heel of fore-leg. <i>Causes.</i> —Inner edge of toe of hind foot kicks or treads on injured part; caused by horse not being properly collected; jumping; pulling up suddenly; galloping suddenly into deep ground; weakness. <i>Treatment.</i> —See wounds.
xviii. Ringworm ...	<i>Symptoms.</i> —Hair falls out in circular patches. <i>Treatment.</i> —Isolate and obtain veterinary advice as soon as possible. If an isolated case, apply tincture of iodine to affected part.
xix. Rope galls or rope burns.	<i>Symptoms.</i> —Wound in hollow between heel and fetlock.

Ailment or injury.	Symptoms, causes, treatment.
xx. Sore backs and saddle galls.	<p><i>Causes.</i>—Long head rope over which horse gets his hind foot.</p> <p><i>Treatment.</i>—See wounds.</p>
xxi. Sprained tendons.	<p><i>Symptoms.</i>—Abrasion or swelling.</p> <p><i>Causes.</i>—Friction or pressure caused by loose riding or badly fitting saddlery.</p> <p><i>Treatment.</i>—Abrasion.—See wounds.</p> <p>Swelling—bathe with salt and water.</p>
xxii. Thrush	<p>... <i>Symptoms.</i>—Foul discharge from cleft of frog.</p> <p><i>Causes.</i>—</p> <ul style="list-style-type: none"> (a). Not picking out feet regularly. (b) Dirty bedding. (c) Bad standings. (d) Diseased frog. (e) Want of frog pressure. <p><i>Treatment.</i>—Remove cause ; clean frog and apply as temporary measure any of the drugs named under wounds.</p>
xxiii. Treads	<p>... <i>Symptoms.</i>—Wound on outside of coronet or, sometimes, above fetlock on hind legs.</p> <p><i>Causes.</i>—Bad drill or bad march discipline.</p> <p><i>Treatment.</i>—See wounds.</p>
xxiv. Wounds	<p>... <i>Treatment.</i>—Apply (a) tincture of iodine ; (b) perchloride of mercury, 1 tabloid to 1 pint water ; (c) Lysol, $\frac{1}{2}$ ounce to 1 pint water ; (d) boric powder.</p> <p>If no drugs available, apply salt and water (1 teaspoonful salt to 1 pint boiled water), or boiled water alone ; bandage whenever possible without causing undue pressure. Interfere with wound as little as possible until seen by veterinary officer,</p>

Ailment or injury.	Symptoms, causes, treatment.
xxv. Wounds in feet.	<i>Treatment.</i> —Treat as ordinary wounds and apply to wound a dressing which is retained to the foot by a tin plate. Stand foot in warm water to relieve pain.

3. *To shoot a horse.*—Place the muzzle of the pistol almost touching the skin where the lowest hairs of the forelock grow.

CHAPTER II
HARNESS AND SADDLERY
EXAMINATION, CARE AND PRESERVATION

15. Examination of harness

1. The following points should be particularly noted :—

i. The general condition of the leather work throughout should be examined, to see that no portion is in a perished or partially perished condition. All straps, reins and other flexible portions of the harness should be capable of being bent over the forefinger at any point without showing signs of cracking. The cracking of leather is usually a proof that it is in a perished or partially perished condition from lack of grease or soap, or from soaking and scouring in hot water. (It should be noted, however, that a piece of leather cut out of the butt, and suitable for a head collar, would not stand a severe bend without showing a crack and the saddler has to wet such leather before bending to sew it round the square.)

ii. The stitching should be carefully examined to see that no portion is giving way, and care should be taken to see that, on that portion of the harness which comes in contact with the animal's body, it is flat, smooth and free from knots; prominent, coarse or knotted stitching may cause bad chafes and galls.

iii. All metal portions should be sound and in thoroughly good working order.

iv. Traces should be most carefully examined to see that they are of equal length and in thoroughly serviceable condition.

2. Generally speaking, the places where harness is likely to wear out are the stitching, the places where various straps, traces, etc., are buckled, trace hooks, hame hooks and eyes.

3. The age of harness and the amount of work that it has done can be fairly well estimated by noticing the amount of wear that has occurred in the metal work at the wearing parts.

16. Care of saddlery and harness

1. Care should be exercised in the handling of all articles of harness and saddlery. Saddles should not be dropped or thrown about, as fractured arches or broken side bars may result, and the usefulness of collar pads is liable to be destroyed if they are subjected to unfair usage.

Minor details should be attended to at once. Stitching should be tested from time to time, as the life of the thread is short compared with that of the leather.

Stirrup leathers should be exchanged occasionally, or shortened at the buckle end, so as to bring the wear on fresh holes. Girth straps require special attention and must be renewed as the holes wear. All exposed iron work should be kept bright, except that issued black japanned. It may be cleaned with emery, bath-brick or sand, and rubbed over with an oily cloth.

Breakages or damages sustained by harness and saddlery should not be allowed to accumulate; they must be made good as they occur.

The length of traces should be tested occasionally when dry, and such as are found to be too long should be spliced in afresh. Any unevenness on the body side of neck or breast collars, numnahs, pannels and straps that would be likely to cause galls must be removed.

17. Preservation of leather

1. Saddle seats, flaps and rifle buckets, which are required to be kept stiff, should be very slightly dubbed annually, but they should be sponged occasionally with soap.

Other leather in constant use should be softened with good soap every day, and should be well dubbed every six months as follows :—

The leather having first been moistened with a sponge, the dubbin (warmed if the weather is cold) should be lightly rubbed in with a sponge or brush; after two or three days it should be rubbed off, and the leather should then be well polished with a brush or cloth.

2. Leather must not be washed with soda or soaked in water. Its vitality is entirely destroyed by hot water. Washing with soap and lukewarm water, quickly and without soaking, will do the least harm if the precaution is taken to apply dubbin or good soap while the leather is slightly damp.

Soft soap should be very sparingly used, as it contains an excess of alkali and turns leather dark.

It is rarely necessary to scrub leather work. Parts affected

by sweat from the horse, such as inside surfaces of breast collars, girths, etc., should be sponged after use with clean cold water and then soaped.

Drying leather by the fire destroys its durable properties and is forbidden.

Leather parts of harness and saddlery can be rendered more durable, and a bright colour retained much longer, by avoiding washing in water as much as possible. Leather work must, therefore, not be allowed to soak in water whilst it is being scrubbed.

3. Dry cleaning by brush and rubber will be found sufficient to remove dust and dirt in many instances. After such cleaning, a little soap or polish for articles in daily use, or dubbin for those to be stored, may be applied.

Beeswax and saddle soap, commonly used in the service to give a polish to the grain of the leather, are not objectionable, provided that good soap is used to keep the leather mellow. The leather work of all saddlery should be kept soft and supple. Seats and flaps of saddles and handled parts of reins should not be polished.

It is particularly important to keep leather girths supple with grease.

4. All saddlery and harness should be taken to pieces periodically, and carefully inspected. Once or twice a year certain parts, such as the inside of breechings and breast collars, should be dubbed, the leather having first been moistened with a sponge. After two or three days the residue of the dubbin should be removed with a dry brush or rubber.

All leather work should be dubbed before being put away in store, and should be overhauled from time to time, especially in hot or damp climates.

5. Ropes, web girths and whips should be scrubbed with clean cold water, when necessary, and pipeclay should not be used on them.

Saddle blankets, pannels and numnahs should be placed in the sun or wind to dry, and then beaten and brushed.

Steel or iron work should be wiped over immediately after use and then rubbed with an oily rag.

6. Black saddlery leather requires greater care than brown. The best blacking only should be used to give it a good appearance.

7. Instructions for the care, preservation and storage of harness and saddlery are detailed in Equipment Regulations, Part I. 1932 Appendix 28.

18. Repairs

Repairs can be rapidly effected so long as careful attention is paid by all ranks to the condition of the saddlery and harness. Neglected gear will always be a source of trouble. It is important that the mounted soldier should understand the necessity for bringing to notice at once all repairs that may be necessary to the saddlery and harness on his charge, no matter how trivial they may seem.

All ranks should also be carefully impressed with the fact that pieces of old harness, etc., are extremely useful for repair purposes, and they should be directed to salvage all derelict and broken harness.

FITTING SADDLERY

NOTE.—All officers, N.C.Os. and drivers must possess a thorough knowledge of the principles of fitting the type of harness used in their units.

19. The saddle—Description and fitting

(See Fig. 8.)

1. *General description.*—The front and rear arches are made of steel; the front arch forms the pommel and the rear arch the cantle. Both arches are secured to the side bars.

The front arch is of a channel form.

The rear arch is a cantle with a curved spoon—a slot to take a strap exists in each pattern.

The side bars are that portion of the saddle which rests on the horses' back, and to which the front and rear arches are secured, thus distributing the weight of the rider along the animal's back.

The side bars are made of wood and are given a twist in the making, which suits the animal's back, the shape being such that in the front and rear there is a slight curve both upwards and outwards from the back.

That part of the side bar which projects in front of the saddle is the "burr"; the projecting portion behind the saddle is the "fan". Fastened to the side bar just behind the front arch is a steel bar with a roller through which the stirrup leather passes.

The numnah pannels.—Side bars are fitted with detachable numnah pannels, the fans of the side bars fitting into the leather pockets at the rear of the numnah pannels, and the "burrs" into the front leather pockets, which are distinguishable by the securing strap and buckle. On each leather pocket

which fits on the fan is sewn a brass link for taking the strap of the rifle bucket, etc.

The object of the numnah pannels is to give extra padding without filling up the channel of the saddle, to protect the side bars and to give a surface which grips the blanket and avoids slipping of the saddle.

"V" girth attachment. (See Fig. 9.)—The "V" attach-

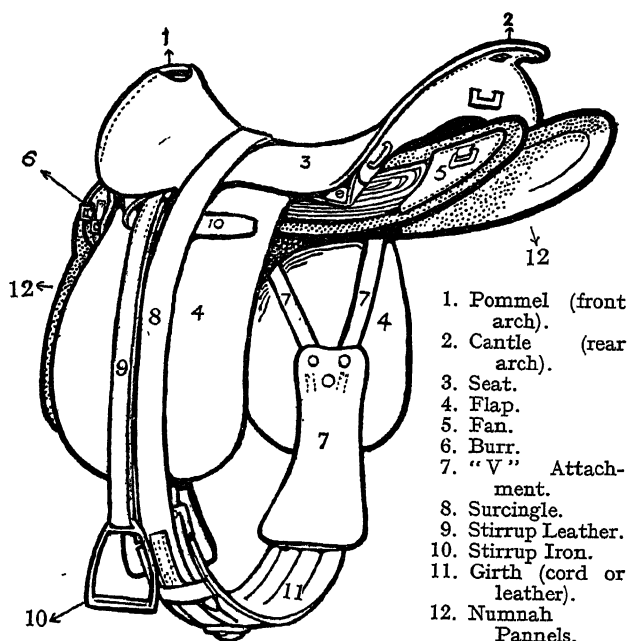


FIG. 8.—Saddle complete

ment consists of two straps (the front and rear straps), which connect the sweat flap to the side bar of the saddle, meeting in a "V" shape on the sweat flap, to which they are secured by rivets to a small brass plate. By means of these straps the position of the two girth straps (which are sewn on to the sweat flaps) in relation to the rest of the saddle can be adjusted to suit the conformation of different animals.

The front strap of the "V" attachment is in two parts. The upper part, secured to the side bar, has a buckle and

the lower part, secured to the sweat flap, is punched with three holes for adjustment to suit the conformation of different animals.

It cannot be too clearly emphasized that these three holes are provided solely for the purpose mentioned and should not be buckled or unbuckled daily in girthing or utilized for shortening or lengthening the girth.

The *rear strap*, the upper part of which is screwed to the

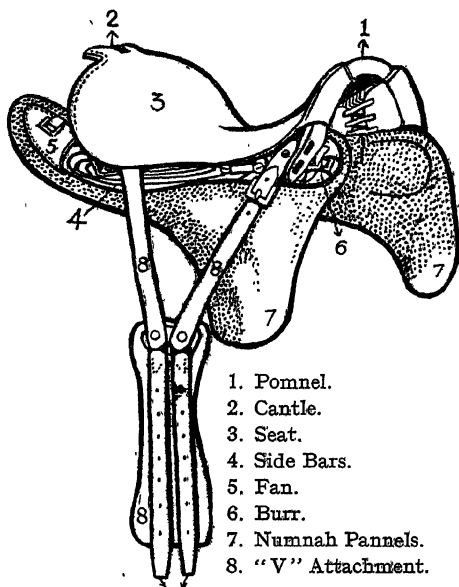


FIG. 9.—Saddle showing "V" attachment

side bar and the lower part riveted to the sweat flap, does not admit of, or require, adjustment.

The *sweat flap* consists of an oblong piece of leather to which the straps of the "V" attachment are secured and on which are sewn the girth straps.

This is provided for the purpose of preventing the girth straps becoming saturated with sweat and consequently perishing, and also to protect the animal's sides from the girth buckles.

The *seat* is the portion of the saddle on which the rider sits. The seat, which is made of leather, covers the frame of the

saddle between the front and rear arches, which are connected by a sling of webbing ; this takes off very largely the strain on the leather.

The *flap* is the covering to the sides of the saddle, made of leather, and of such a shape as to suit the bend of the rider's legs when his feet are in the stirrups.

The *stirrup leather* is the support for the stirrup iron. It has a buckle at one end and is punched with holes at the other end for adjustment.

The *stirrup iron* is made of steel. The top part is of a semi-oval shape with a slot at the top, through which the stirrup leather passes. The tread is the flat portion on which the rider's foot rests.

The *surcingle* consists of a plain leather strap, two inches in width, tapering to one inch wide towards the buckle. At the other end is sewn a strap one inch wide, punched with holes for buckling.

Girth.—The girth of the riding saddle varies in length from two feet six inches to three feet. It is made of leather or cord, with split openings. There are two buckles at each end to hold the girth straps. At three inches from each end is sewn a leather loop, through which the surcingle is passed before being fastened.

2. *Fitting.*—The following are the chief points of importance in fitting a saddle :—

- i. The withers must not be pinched or pressed upon.
- ii. There must be no pressure on the horse's spine.
- iii. The shoulder-blades must have free and unimpeded movement.
- iv. The weight must not be put on the loins, but on the upper part of the ribs through the medium of the muscles covering them.
- v. The weight must be evenly distributed over a surface which extends from the play of the shoulders to the last rib. The burrs and fans should bear no weight.
- vi. The saddle should be level on the horse's back, neither dipped in front nor in rear.

The saddletree-maker should be present on all saddle-fitting parades, as a little expert bevelling of the side bars can often materially improve the fit of a saddle.

3. There are three sizes of saddle and, to enable a proper choice to be made, the bare saddle-tree should be placed on the horse's back so that the front arch is above the hollow behind the shoulder.

4. The arches and seat should then be clear of the spine, although this is not always possible with horses possessing high withers. The front arch must be wide enough to admit the hand on either side of the withers. The side bars must bear fairly evenly on the back and their edges must not press into the withers or ribs.

5. The saddle is then taken off, fitted with numnah pannels and replaced. The saddletree will now be considerably raised and the proper thickness of the blanket can be estimated.

It must be remembered that the addition of a blanket reduces the width of the front arch and narrows the saddle across the top of the side bars.

6. The blanket is then folded (Sec. 20, 1) and placed on the horse's back, the tree being placed on it (Sec. 20, 2). The blanket must be well pressed up into the front arch, and, before the girths are tightened, it should be noticed whether the burrs are off the shoulders and the fans off the loins; if they are not, the thickness of the blanket beneath the side bars must be increased by turning it up on either side. The girths are now pulled up and a man placed in the saddle.

7. The fit of a saddle cannot be determined until the saddle is inspected with a man sitting on it, for parts which appear well clear of the back when no weight is in the saddle may be brought dangerously close to it by the pressure of a man's weight.

8. First ascertain that the withers are free from pressure. Make the rider carry his weight forward; then pass the whole hand beneath the blanket and over the top, and along both sides, of the withers. If there is any difficulty in inserting the hand, the saddle does not fit.

9. Next see that the shoulder-blades are free from pressure. This is done by passing the hand beneath the blanket to the play of the shoulder. If there is pressure, the hand can only be introduced with difficulty. Assuming that the hand can find its way in, the horse's fore leg should be advanced to its full extent by an assistant. This should be possible without the examiner's fingers being pinched between the shoulder-blade and side bar, even if the man is leaning forward in the saddle. If the fingers are pinched, the shoulder-blade will also be pinched, and the saddle must be raised by fitting thicker numnah pannels on the side bar or by making an extra fold in the blanket. Both sides must be tested.

10. The fans should then be tested for loin pressure. With

the man leaning back in the saddle, the flat of the hand should find ready admission under the fans.

11. Then ascertain whether the pressure of the side bars is evenly distributed. This can be done in the following way :—

The saddle, having been ridden in for about half an hour, is carefully ungirthed and the tree lifted from the blanket without disturbing it. The blanket will be found to bear the imprint of the side bars and an examination will show at a glance whether they are pressing evenly from top to bottom and from front to rear.

The examination must be made without delay, as the elasticity of the blanket soon causes it to lose the impression of the side bars.

The commonest places to find excessive pressure are the top edge of the side bar behind the front arch and the bottom edge in front of the rear arch. If there is a deeper impression on the blanket in these places than elsewhere, the pressure is not evenly distributed and the corresponding part of the horse's back is receiving an undue amount of the weight. With a horse in condition, or with a good blanket and numnah, this may not necessarily cause a sore back; but it will certainly do so should the animal lose condition or the blanket or pannel be thin, for these conditions will bring the tree nearer to the bony framework of the horse.

Irregularity in the fit of the side bars, which cannot be removed by the saddler, may be remedied by the introduction of pieces of numnah to fill up the space between the side bars and blanket.

When the pieces of numnah have been cut to the required shape, they must be fixed in position. In peace this can be done with glue, but in the field they may have to be tied on, or what is better, bound in position by means of a piece of leather (basil) which envelopes the side bar at the required part and can be laced with string across the top.

By means of these strips of numnah the most radical alterations in the fit of a side bar can be effected in a few minutes by a man who has but little technical skill.

20. Saddling

1. The folded *blanket* should be placed on the centre of the horse's back, care being taken that no grass or grit adheres to it.

It should be folded to such a size that it projects about two inches in front of the burrs and behind the fans.

It can be folded in several ways. With a horse of normal

shape and condition the following method, entitled the "double fold", is recommended:—Double the blanket lengthwise, then double it again crosswise. It should then be placed lengthwise across the horse's back with the selvedge edges on the near side and to the rear. The size when folded is 2 feet 8½ inches by 2 feet 4 inches. The folding of the blanket may be modified to suit special horses and to meet alteration in shape consequent on falling away in condition, or from other causes.

In the case of a horse which has fallen away in condition, and for certain shapes of back, a useful method is the "channel fold". The blanket is folded lengthways in three equal parts, each end is then turned over and folded towards the centre (two or three folds may be taken as required to suit the horse's back, leaving a channel in the centre).

In cases where an extra thickness of blanket under the front arch is required the "envelope fold" may be found a useful method. The blanket is folded in three folds of equal width in the length of the blanket. A fold of two feet is then made at one end; the other end is turned over, forming a pocket, into which the opposite end is tucked; it is then placed on the horse's back with the thick end near the withers. When this method is used, a second blanket is necessary to prevent rubbing of the "V" attachment.

2. The front of the *saddle* should not be so far forward that it interferes with the play of the shoulder. The pannels of the saddle should lie flat on the top of the horse's ribs, the weight of the rider being borne by the part between the front and rear arches. The burrs and fans should bear no weight. The front arch, when stuffed panels are attached, should clear the withers to the breadth of not less than two fingers when the rider is in the saddle. The saddle, to afford a suitable seat for the rider, should be level, neither dipped in front nor in rear.

3. The *girth* should be placed about four inches behind the point of the elbow. It should be sufficiently tight to keep the saddle in its place and no tighter. It should be tightened gradually, and not with violence, care being taken that the skin is not wrinkled. It is recommended that the girths of all except young and growing horses should be fitted with the buckle in the second or third hole from the free end of the strap.

4. The *surcingle* should lie flat over the girth and be no tighter than it.

5. The *stirrups* should be attached to the saddle as follows. Pass the end of the stirrup leather through the stirrup iron,

then through bar on the side bar of the saddle from below, inwards to outwards, then fasten to the tongue of the buckle. The buckle should be then pulled up close to the bar on the side bar, the point of the stirrup leather passed under the two leathers from the front, then passed under the surcingle.

For the fitting of stirrups, see Sec. 41, 4.

6. *Adjustment of the "V" attachment.*—The normal position of the attachment is with the buckle in the centre hole of the three—6½ inches from the rivet; this position will suit a very large number of horses. The upper and lower holes are provided for the adjustment; additional holes must not be punched.

On animals with straight shoulders that carry the saddle too far forward the front strap should be shortened by buckling it in the lower hole; on those that have deep chests on sloping shoulders and are thick in front of the saddle the front strap should be lengthened. In no case will it be worn as a true "V," i.e., the front and rear straps of equal length; this would depress the hinder part of the saddle and cause other difficulties.

Care should be taken in all cases to buckle the near and off straps in corresponding holes.

7. The *wallets* (officer's only) should be placed on the pommel of the saddle with the hollowed side of the connecting piece to the front. The wallet strap should be passed from the rear through the rearmost staple on the saddle, then through the keeper of the wallet, next through the front staple of the saddle and finally buckled, the point of the strap pointing to the rear, the buckles being in line with the front edge of the wallet.

8. The near shoe case, holding the *frog*, is attached to the rear arch of the saddle on the near side, the girth being passed through the steadying strap, which should be of such a length as to allow the sword to hang vertically.

21. The head collar—Description and fitting

1. *General description.*—The *service head collar* (see Fig. 10) is constructed in such a way that it can be used either as a bridle or as a head collar in the stables and on the picket line.

The *crown loop* is a small piece of leather, consisting of two loops which connect the cheek piece and throat lash at the top of the bridle on the animal's poll.

The *brow band* consists of a leather strap with two loops at each end, through which both the cheek piece and throat lash pass, and over these loops lie the tabs, which are small

leather straps stitched on to the brow band and fastened by a brass stud which is sewn into the loop of the brow band, through which the bridlehead passes. The object of the brow band is to prevent the cheek piece and throat lash from slipping backwards. The object of the tab is to hold the bridlehead in position.

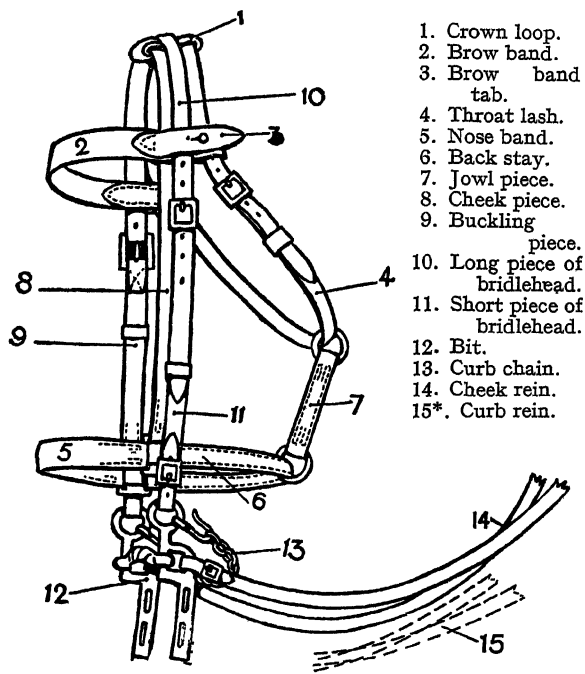


FIG. 10.—Head collar with bit and bridlehead

The *cheek piece* consists of a strap of leather sewn on at one end of the square which connects the nose band and back stay together on the near side. At the other end it is punched with holes for securing to the buckle of the buckling piece.

The *buckling piece to the cheek piece* consists of a strap sewn on at one end to the square which connects the nose band and back stay together, but on the opposite square to that which holds the cheek piece. At the other end of the

* The second rein may be attached to the centre or lower bars.

buckling piece is a buckle to which the cheek piece is fastened.

The *cheek piece and buckling piece*, when fastened together, support the nose band and back stay in position.

The *throat lash* consists of a plain leather strap with a buckle at one end and punched with holes at the other for adjustment. The throat lash secures the bridle on the animal's head.

The *nose band and back stay* are two leather straps connected to each other by two square links. On the back stay runs the lower ring of the jowl piece.

The *jowl piece* consists of a short piece of double leather with a ring sewn on to each end, connecting both the throat lash and back stay.

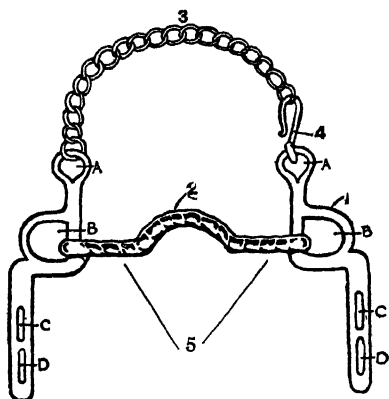


FIG. 11

The *bridlehead* is in two parts :—

The *long piece* has a buckle and leather billet at one end for securing to the bit, and punched with holes at the other end for adjusting with the short piece.

The *short piece* has a buckle and leather billet at one end for securing to the bit, and at the other end is a buckle for engaging with the long piece.

The *bit, reversible* (Fig. 11), which is made of steel, is of two patterns, namely, one with a smooth mouth piece and the other with the mouthpiece "twisted" on one side, but very few of the latter are provided.

The parts of the bit are as follows :—

Cheek (1) { eye (A).
in which are { upper (B), centre (C) and lower bars (D).

Mouthpiece, with port mouth (2) and canons (5).

Curb chain (3).

Curb hook (4).

The *eye* is the loop at the top of the cheek through which the billet of the bridlehead is passed.

The *upper, centre and lower bars* are the ring and slots through which the leather billet of the rein is passed.

The *mouthpiece with port mouth and canons* is the steel bar which joins the cheeks of the bit. The straight parts are called canons ; the bend in the centre is called the port mouth, the object of which is to give the rider greater leverage on the animal's mouth if required.

The *curb chain* is the steel chain of 19 links secured to the eye of the bit on one side and to the curb hook on the other eye.

The bits are issued in three sizes—large, medium and small.

2. Instructions for fitting.—

Brow band.—The brow band should be just long enough to allow the cheek piece to pass from the crown down, without rubbing the bones on each side of the temple or cutting the base of the horse's ears.

Cheek piece and buckling piece.—The cheek piece and buckling piece should be parallel to and behind the projecting cheek bone.

Throat lash.—The throat lash should fit loosely, being only sufficiently tight to prevent the head collar from slipping over the horse's ears, thus in no way interfering with the breathing or swallowing. A good guide is to allow the breadth of the hand between the throat lash and the horse's cheek. The buckle of the strap should be in line with the horse's eye on the near side.

Nose band and back stay.—The nose band and back stay should fit so as to admit the breadth of two fingers between the horse's nose in front and the nose band, and between the horse's jaw and the back stay. The nose band and back stay should hang so as to allow two finger breadths below the projecting cheek bone.

3. *Bridling*.—The *bridoon* (used for training remounts) should touch the corners of the mouth, but should hang low enough not to wrinkle them.

4. The *bit* should be put in the horse's mouth with the smooth side of the bar against the tongue. It should be so placed that it is not high enough to wrinkle the lips, or low enough to touch the tush (rudimentary in the mare). The mouthpiece will be correctly placed between these limits

when, the lower cheeks being drawn back to approximately 45 degrees to the mouth, the curb chain lies flat and truly in the chin groove. The proper length of the curb chain, and the right position of the mouthpiece, depend on each other, and on the sensitiveness of the horse's mouth. Generally speaking the softer the mouth, the higher should be the mouthpiece, and the harder the mouth, the lower. But the mouthpiece will always be too high when a curb chain of suitable length rises above the chin groove.

5. The *curb chain* should be fixed permanently on the off side of the bit. The adjustment to the near hook should be made by twisting the chain to the right until it is quite flat, putting the last link on the hook and then taking up as many more links as may be necessary. Generally speaking the "greener" the mouth, the longer should be the curb chain.

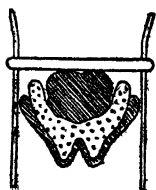


FIG. 12.

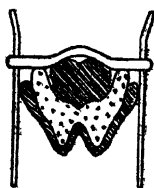


FIG. 13.

6. Care should be taken to fit each horse with a bit of the correct size. A narrow bit pinches the horse's lips; a wide bit moves from side to side and bruises them and also causes uneven pressure on the bars.

Figs. 12 and 13 represent bits without and with a port and show a section of the horse's tongue and lower jaw.

When a bit with a straight bar is used, most of the pressure is taken by the tongue. The use of a bit with a port brings pressure to bear on the bars, because the tongue tends to fit into the port. The tongue, by moving, is able in effect to alter the position of the spot on which the pressure is exerted in the case of a straight barred bit; but when a port-mouthed bit is used, the latter always bears on the same portion of the bars. A bit with a straight bar, therefore, has an effect on the horse very different from that caused by a bit with a port.

Whether a bit with a straight bar or one with a moderate port will suit a horse the better depends on individual

idiosyncrasy and many other factors, amongst which the following are important :—

- i. Previous training of the horse.
- ii. Temperament of the horse.
- iii. The rider.

The greatest care should, therefore, be taken to fit a horse with the mouthpiece which suits him best and, when a bit is first used, care must be taken that its pressure on the tongue is not such as to induce the horse to try to get his tongue over the bit. (See Secs. 61, 3 and 78, 3.)

7. A bit with a very high port is severe because the port presses on the roof of the mouth when brought into play. The effect is increased, and may be made cruel, by a tight noseband which prevents the horse from opening his mouth.

A very narrow port is also severe because it pinches the tongue.

The use of very narrow or very high ports should never be allowed except in special circumstances and for particularly good horsemen.

8. When a bit with a sliding bar is used, care must be taken that the horse's lips are not pinched between the cheek and the bar owing to the holes in the latter having become too large from wear.

9. The *reins* should be of such a length that, when held by the middle in the full of the left hand, with a light feeling of the horse's mouth, they will touch the rider's waist.

10. The *head rope* should be fitted by passing the end through the bottom ring of the jowl piece from the off side, then through the ring of head rope and over the horse's neck from the near side. The head rope is then secured by four complete coils and two half-coils, and adjusted so that the front of the coil is a span of the hand from the bottom ring of the jowl piece.

22. The breastplate and martingale

1. The *breastplate* is not as a rule required. It is only necessary on horses whose conformation is such that the saddle is continually slipping back. When used it should be so fitted that the upper edge of the rosette or leather is three finger-breadths above the sharp breast bone. It should admit the breadth of the hand between it and the flat of the shoulder.

2. The *standing martingale* should be used only for exceptional horses. It should never be necessary for a horse which is well trained and is of reasonably good conformation.

Its use is justifiable in the following cases :—

- i. For a horse which naturally carries his head so high and whose head and neck are so badly put on that it is no effort to him to evade the bit by raising his head.
- ii. For a horse which has been badly trained and has learnt to evade the bit by throwing his head up. A standing martingale gives the rider a certain amount of control by preventing this evasion.
- iii. For a horse which, because he is afraid to face his bit, or as a result of bad riding and being jobbed in the mouth, has developed the habit of jumping with a hollow back. A standing martingale, by preventing his getting his head up, may cure this by inducing him to round his back and jump in better style again.

The standing martingale should be fitted of such a length that there is no strain on it until the horse has got his head above the proper position. Its action is automatic and independent of the rider's hands. It does not interfere with the recovery of a horse which makes a mistake at a fence, except when he drops his hind legs into a ditch or water.

3. The *running martingale* has two uses :—

- i. To help in keeping a horse straight, as, for instance, when riding him at a fence. For this purpose the rings of the martingale must be closely connected together, that is, not more than four to five inches apart; a pull on one rein is then communicated to the other through the martingale rings and their connection. Its action for this purpose is the same as that of an "Irish" martingale.
- ii. To ensure the pull of the reins on the horse's mouth being in the right direction if the rider gets his hands into the wrong position. For this purpose it may be mounted either on a snaffle or a double bridle. If used with a double bridle, it should be put on the curb rein; this will ensure the pull on the bit coming from the right direction and will not interfere with the action of the snaffle in placing the horse's head.

It should not be used for keeping a horse's head down, which is the legitimate use of the standing martingale. If used for this purpose, it interferes with the correct action of the rider's hand on the horse's mouth.

Owing to the fact that, when properly fitted, it ensures

the pull on the bit coming from the right direction, however high the rider's hands are, it tends to make him careless about their position and should therefore not be allowed with recruits on trained horses in the riding school.

It should be fitted so that it has no bearing on the reins as long as the rider's hands and the horse's head are in the proper position.

4. The *neck-strap* of a breastplate or martingale provides a useful support for the rider, who can lay hold of it in an emergency and so avoid using the reins to keep or regain his balance.

HARNESS, POLE AND SHAFT DRAUGHT

23. Harness, pole draught

(PLATES I, II AND III)

1. *General description.*—This type of harness, introduced in 1911, reduced the number of components of service harness, thus facilitating its use in the field. It was designed normally for pole draught with breast collars, but certain other articles were included to permit of the use of neck collar draught and also the attachment of pole bar and pole chains.

Wheel and *lead* double sets are issued, but the headgear, breast collar and saddle are common to either set, while the adjustable wire trace and the double hip straps ("straps, hip, long, wheel") in the wheel set replace the long wire trace and the loin strap ("strap, loin lead") in the *lead* set, and the neck-piece, pole bar and breechings are added.

The outstanding feature of this harness is the fact that the old method of supporting the traces and breeching from attachments is entirely dispensed with, and thus the crupper with its hip straps and the flank straps disappear, and the one description of saddle can be used for both harness and saddlery. Lists of the articles which constitute this harness are given in Equipment Regulations, Part I, 1932, Appendix 21.

2. *Components.* i. *Breast collar.*—The breast collar is of folded leather, having a lay (or thick piece of leather) sewn down the centre. To each end of the collar under the lay is fastened a steel *D*, through which runs a *leather short piece*, called the draught tug, which has a ring and four links of chain at one end for engaging a short trace, when lead horses are harnessed, and at the other end a releasable link for engaging in the bent link of the quick release attachment on the trace. The object of this is to give the lead horse a direct pull on the swingletree.

PLATE I

[To face page 52.]





HARNESS, POLE DRAUGHT, OFF SIDE.

PLATE III

[To follow Plate II.]



HARNESS HORSE DRAUGHT LONG REIN

At about seven inches on each side from the centre of the collar, secured under the lay by a link, is fixed a $2\frac{3}{8}$ -inch steel ring, sometimes called a *backing ring*; through these rings pass the bent links of the neck-piece pole bar, which are fastened to the links on the pole bar in the case of limbered or two-wheeled pole draught vehicles, and in the case of the G.S. wagons to the tug neck-piece. These rings keep the neck-piece pole bar in position, and help to distribute the strain of stopping the vehicle over the breast collar, hip straps and breeching. At each side of the breast collar, about 13 inches from the centre, is a fixed tug, which passes over and under the lay on the breast collar, with a buckle at the end for fastening the neck strap.

ii. *Neck-piece pole bar*.—This is of folded leather, $2\frac{1}{4}$ inches in width, having releasable attachments at each end fitted with straps, which pass through the rings on the breast collar and engage either the links on the pole bar, which is used with limbered and two-wheeled pole draught vehicles, or the links on the tug neck-piece, which is used with G.S. wagons. The neck-piece pole bar is in two parts, the long part having a strap and the short part a brass buckle to admit of adjustment to fit various sized animals; *straps, extending*, allow adjustments to be made. The neck-piece serves a dual purpose—it may be attached direct to the pole bar, or it may carry the tug neck-piece when pole chains are used.

iii. *Neck strap*.—The object of the neck strap is to support the breast collar in position. It is $41\frac{1}{4}$ inches in length over all, by $1\frac{1}{2}$ inches wide at the centre, lined with felt, and has straps $1\frac{1}{4}$ inches in width at each end, punched with holes for buckling on to the fixed tugs on the breast collar, which enable it to be adjusted for fitting. *Rings, rein, driving*, should be fastened on to each side of the neck strap, to carry the reins in long rein driving.

iv. *Tug neck-piece*.—The tug neck-piece, which is for use with G.S. wagons or other four-wheeled vehicles fitted with pole chains or straps, is of double leather, $9\frac{1}{4}$ inches in length and 2 inches wide; it has a link at each end, to engage the releasable attachments on the end of the neck-piece pole bar, which pass through the rings on the breast collar. It is fitted in the centre with a sliding link with a ring, through which the pole chain at the end of the pole of the wagon is passed before fastening.

v. *Straps, hip, long, wheel, with tug-pieces (for use with wheel harness only)*.—These consist of two straps, each 57 inches in length, joined in the centre by a rivet to admit of their taking a proper set when in use, and punched at each

end with holes for buckling on to the tugs on the breeching and traces respectively. These straps support the breeching and traces, by buckling one end of each strap to the tug on the breeching and the other end to the tug on the trace.

vi. *Strap, loin, lead, with tug-piece (for use with lead harness only)*—The strap is 56 inches long, having a loop at one end and being punched at the other with holes to take the buckle of the tug, and for adjusting the strap to fit.

The strap and tug-piece, when buckled together, support

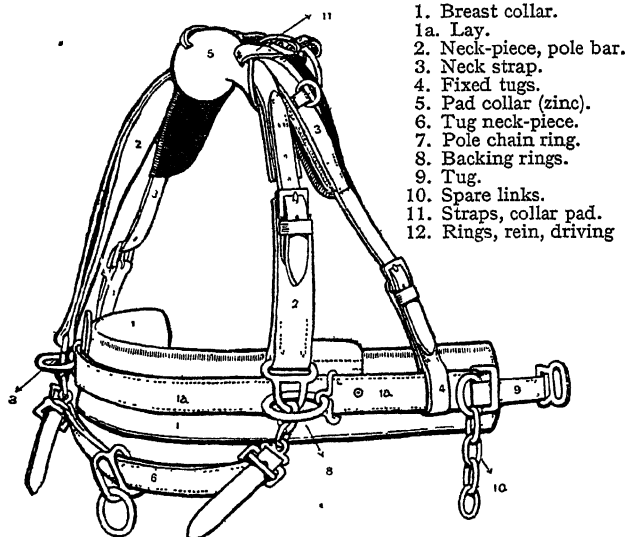


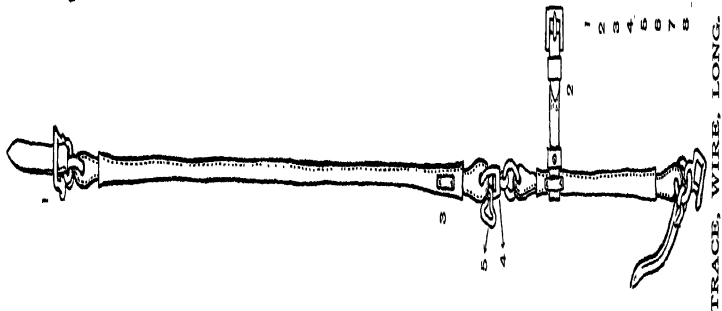
FIG. 14.—Breast collar, neck strap and neck-piece pole bar

the lead traces by passing the strap through the loop behind the swivel on one trace, and then running one end of the strap through the loop on the other. The loop of the tug-piece is run through the loop on the opposite trace, and then brought over the tongue of the buckle. The loin strap and tug are then buckled together. The tug-piece should be on the near trace on the near horse, and on the off trace on the off horse.

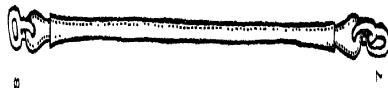
vii. *Traces, wire, long, with quick-release attachment ends and swivel centre (Plate IV)*.—Each trace is five feet six inches in length over all, made of 1-inch steel wire rope, galvanized, covered with leather piping and fitted with two leather loops; one loop is in front of the swivel to hold the detachable tug,

PLATE IV HARNESS POLE DRAUGHT TRACES

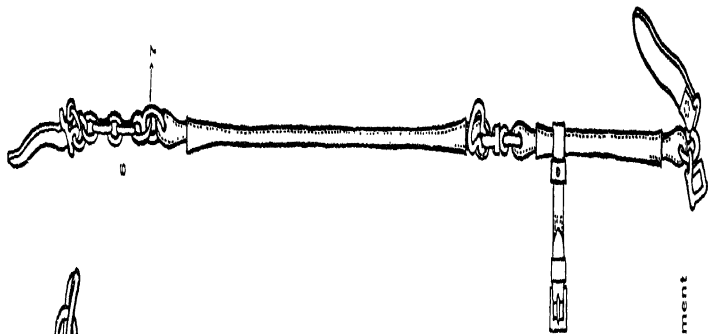
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TRACE, WIRE, LONG.

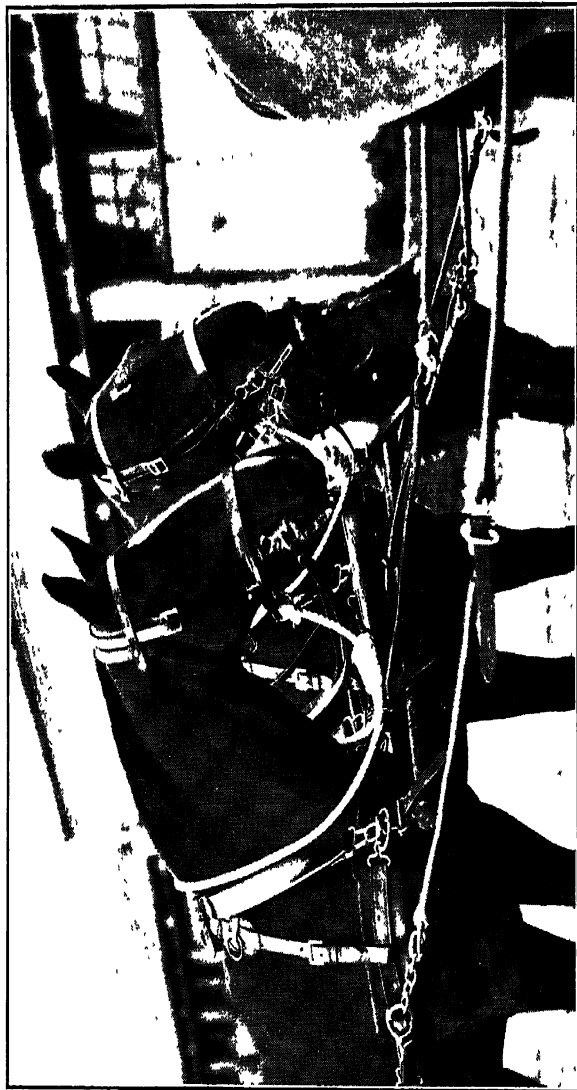


SHORT TRACE.



TRACE, WIRE, ADJUSTABLE.

- 1 Quick Release Attachment
- 2 Detachable Tug
- 3 Loop for Tug
- 4 Steel Swivel
- 5 Shackle for Breeching
- 6 Adjustable Links
- 7 Rams Horn Hook
- 8 Shackle for Quick Release



HARNESS, POLE DRAUGHT, G.S., TRACES, WIRE, SHORT.

which buckles on the hip strap in wheel draught, and another loop is behind the swivel to support the loin strap in lead draught. A releasable attachment is fitted at each end, and in the centre of the trace is a steel swivel, attached to which is a shackle through which the strap of the breeching is passed before buckling.

viii. *Traces, wire, adjustable* (Plate IV).—This is another pattern of trace which is used in wheel draught. The description is the same as in paragraph vii., above, except that at the rear end of the leather trace is a bent hook to take one of the four links of chain, which are fitted with a releasable attachment, thus enabling the trace to be adjusted as required.

ix. *Traces, wire, short* (Plates IV and V).—This trace is used, when four horses are in draught, for attaching a lead horse to the wheel horse ; or, when six horses are in draught, for attaching the wheel horse to the centre horse, or the centre horse to the lead. The trace is three feet three inches in length over all, made of steel wire as described in paragraph vii., with a steel "ramshorn" hook at one end for hooking on to the spare links on the breast collar of the wheel horse, and at the other end a steel double link to receive the releasable attachment at the end of the traces on the lead horse.

x. *Traces, wire, wheel*.—These are used when more than three pairs of horses form a team. They go direct from the swingletree to the short traces (see Plate V) of the second pair of animals ; the object is to prevent strain on the harness of the wheel horses.

xi. *Rings, rein, driving*.—These are buttoned round the neck strap and serve a similar purpose to that of the terret rings on the harness.

xii. *Chains, hame and trace, and attachments, hame, pole bar*.—These are used when a neck collar replaces the breast collar.

3. *Fitting of component*.—i. The *breast collar* should hang horizontally from the neck strap. The lower edge of the collar should be one inch above the point of the shoulder, so as not to interfere with the free movement of the animal, and should admit the breadth of the hand between it and the animals' breast when at the halt. The higher it is within reason, the less chance there is of the horse galling.

ii. The *neck-piece pole bar* should be passed over the animal's neck on the collar pad in front of the neck strap, with the open edge to the front. The releasable links should be passed through the rings on the breast collar, before engaging either the pole bar or tug neck-piece, as the case may be. It should be adjusted by means of the buckling strap, so as to carry the

supporting pole bar the width of a hand above the breast bone. If lower, the bar will gall the animal's chest. Care must be taken to have the bar horizontal.

iii. The *neck strap* should be passed over the animal's neck on the collar pad behind the neck-piece pole bar, and should be adjusted so as to hold the lower edge of the breast collar one inch above the point of the shoulder.

iv. The *tug neck-piece* should be fastened to the ends of the neck-piece pole bar, which passes through the rings on the breast collar. The *pole chains* should be passed through the ring at the end of the double link.

v. The *hip straps, long, wheel*, should be fitted so that the front points support the traces, which should be in a straight line when the animal is in draught. The back points should support the body part of the breeching, so that the latter hangs horizontally about 16 inches below the root of the dock.

vi. The *strap, loin, lead*, should be fitted so that the trace shall be in a straight line when the horse is in draught.

vii. The *traces* should be of equal length, and the length must depend on the size of the horse. The distance between the wheel horses and the splinter bar of the vehicle to which they are attached should be about 18 inches, and the distance between horses in a team should not be less than one yard from nose to tail. When put back in the breeching the horse should be at least a foot from the splinter bar.

viii. The *breeching* should be fitted about 16 inches below the root of the dock, and should be so adjusted that the movements of the horse's quarters, when in draught, are in no way interfered with; it is kept horizontal by the hip straps. When put back in the breeching, the horse should be at least a foot from the footboard.

ix. *Pole chains* should be so fitted that, when wheel horses are standing up to their collars, there is no pull on the chains. By the use of a tug neckpiece in connection with the pole bar supporting straps, horses with wheel harness can be harnessed to G.S. wagons whether the latter are fitted with pole chains or pole straps.

x. The *kicking-strap*, when used, should be so fitted as to give the play of a hand's breadth between it and the horse's croup when he is standing in his collar.

xi. The *headrope* should be fitted by passing the end through the bottom ring of the *jowl piece* from the off side, then through the ring of the headrope and over the horse's neck from the near side. The headrope is then secured by four complete coils and two half coils, and adjusted so that the front of the

coil is a span of the hand from the bottom ring of the jowl piece.

24. Harness, shaft draught

1. This harness consists of certain articles which enables harness, pole draught, to be used in shaft vehicles; they are:—

- i. Luggage saddle with numnah pannels.
- ii. Back band and tugs.
- iii. Girth straps.
- iv. Girth.
- v. Numnah.
- vi. Side rein.

2. When this harness is used with *farmer's draught* fittings, the back band and tugs are removed and replaced by bands, back short, and bands, belly, of *harness, farmer's draught*.

3. *The luggage saddle.* i. *Description.*—The luggage saddle consists of a small saddle with girth straps, girth and back band with two tugs.

The saddle comprises a small wooden tree made on the same principle as the riding saddle, covered with a leather seat and fitted with numnah felt pannels.

The tree is composed of two wooden side bars, connected by two iron arches, one front and one rear, and in the centre by a thin iron trough on which the back band lies. Attached to the wooden side bars on each side is an iron *D*, which holds two detachable girth straps. There is no *V* attachment, such as is used with the riding saddle. On each side of the seat of the saddle are two oblong holes through which the back band passes.

The girth used with the luggage saddle is of the same description as that used with the riding saddle, but is longer, being four feet in length.

ii. *Fitting.*—The luggage saddle should be placed in the middle of the horse's back and have an equal bearing on both sides, the front part two hand's breadth behind the play of the shoulder.

PACK SADDLERY

25. Pack saddlery, horse and mule (British pattern)

1. *Principles of construction.*—The principles of both fitting and construction are identical with those of the riding saddle (Sec. 19, 2).

2. The pack saddle is composed of:—

- i. Tree, adjustable.
- ii. Mark *V* pannels and accessories.
- iii. "*V*" attachment and short girth.

3. *Tree, adjustable*.—The arches, hooks, loops and plates are of steel.

The *side-bars* are of padouk or sabicu wood, 20 inches in length by $3\frac{1}{4}$ inches in width, curved and twisted. They are so set on the arches that, when turned horizontally, the distance from edge to edge is six inches across the front and $7\frac{1}{2}$ inches across the rear.

The *bars, hanging*, may be removed when ordinary loads are being carried, and used when the saddle is required for carrying cacolets or other awkwardly shaped loads. Two *bars, hanging*, form a pair. They are 22 inches in length and $3\frac{1}{4}$ inches in width. The steel arms are $8\frac{1}{2}$ inches in length above the bars; they are bent to hang on the saddle hooks, eyes being formed to project beyond the hooks to take the hooks of the cacolets. Each bar has a hole in the centre to take the strap of the girth leather issued with them, and a small strap with buckle is attached to each arm for use to prevent the load or cacolet working off the bar.

4. *Pannels*.—The only type of pack pannel used with the adjustable tree is the Mark V. Pannels are issued in pairs. Each pannel consists of a leather back, with tan dowlas lining, the stuffing being horsehair. They are attached to the side bars by leather pockets, the front pocket being secured by a strap and buckle. An opening in the outer side admits of adjustment of the stuffing. The stuffing can be adjusted as required, and kept in position by additional spot stitches if necessary. Pannels are fitted with links to take the straps of the Mark V breast collar and breeching; the hooks attached to these links were intended for the chains of the earlier, and now obsolete, marks of breast collars and breechings.

The accessories to the pannels consist of:—

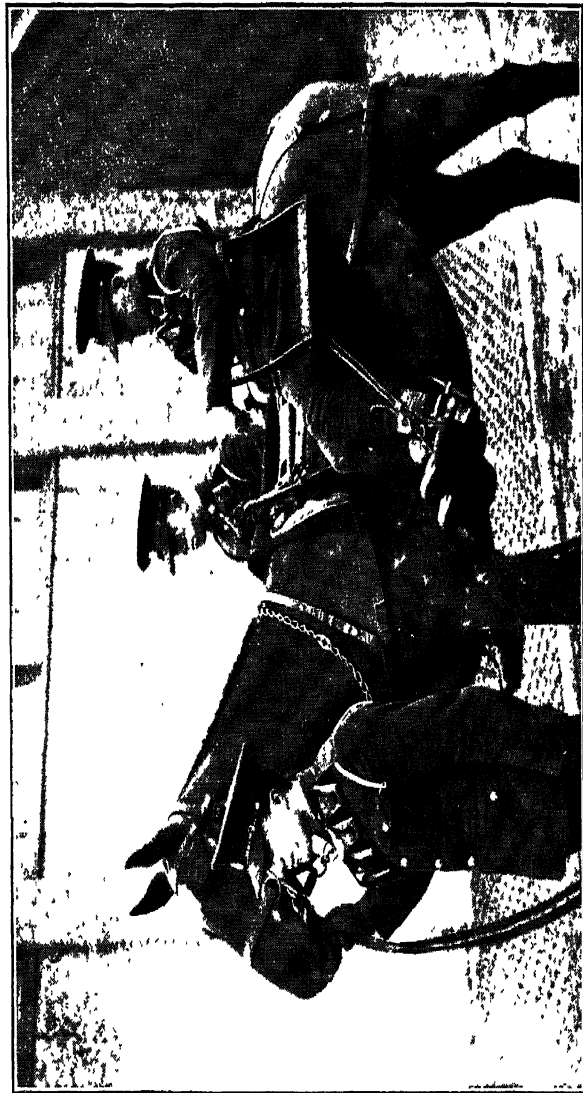
i. *Breeching*.—This has a threefold leather body two inches wide, the ends being fitted with straps and buckles for attachment to the pannels. In appearance it resembles the *breast collar*. It is of cloak hide with unstitched edges, but the straps which attach to the pannels are detachable, and are looped to the links on the pannels before being buckled to the body of the breeching. It is supported by the loin strap with its buckling piece.

ii. *Crupper*.—This is of leather with two straps each 20 inches by one inch. It is divided into three parts:—

(a) The *front part*, which consists of two straps each with fixed loops at one end, the other end being punched to engage with buckles on the body part. These parts are passed round the rear arch of the saddle, thus providing the means of attaching the crupper to the saddle.

PLATE VI

[To face page 59.]



PACK SADDLERY, C S—CACOLET.

(b) The *body part* and (c) the *dock-piece*, which are made in one piece, the body part being fitted with two buckles to engage with the front part as described above, and also with a loop of leather through which is passed the loin strap. The dock-piece passes round the root of the animal's tail, great care being necessary that it is kept as supple as possible, and that all hairs are pulled through the dock-piece to prevent friction.

iii. The *breast collar* is made of leather 2 feet $4\frac{1}{2}$ inches in length, with neck strap attached. It is of a particularly light type, not being intended for draught purposes. It is of threefold cloak hide, the edges being left unstitched. The straps which attach to the pannels of the pack saddle are permanently affixed to the body. It has attached to the body at one side a strap $37\frac{1}{2}$ inches long, which with the short buckling-piece at the other side forms the neck strap for supporting purposes.

iv. *Ropes, baggage* (Fig. 15).—These are of $1\frac{1}{4}$ -inch Italian hemp, connected as shown.

v. *Cover*, 6 feet by 6 feet, G.S.—In addition to the above equipment a waterproof cover, six feet by six feet, with brass eyelets and two lengths of rope, is supplied for covering loads. When it is so used, the ropes are secured on both sides to any convenient part of the load; if too large, it can be reefed by passing the rope through two coincident eyelets.

vi. *Surcingle*, Mark III.—This is a web strap, 14 feet in length, strengthened with leather where the holes are punched. In use it passes over the whole load, the buckle being placed high on the load. It is tightened by placing the right shoulder under the load and then making the adjustment. When not in use, it is folded into four and inserted between the girth straps and the pannel of the saddle (above the lay) on the near side, buckle to the front.

vii. *Cacolets* (Plate VI).—These are iron-framed adjustable chairs, intended for the conveyance of sick and wounded by pack transport. A pair of cacolets weighs 56 lb. They are interchangeable, i.e. they can be used either on the near or off side of the saddle by a simple transposition of the back strap and foot-rest.

5. "V" attachment and girth (Plate VIII).—The Mark V girths have two disadvantages :—

- i. They cannot be *girthed up* when the load is in position.
- ii. They have no loop for the surcingle.

The "V" attachment has been designed to enable a shorter girth to be used, to confer the advantages of the fitting of the saddle, universal, to the pack saddle and to provide for the security of the surcingle.

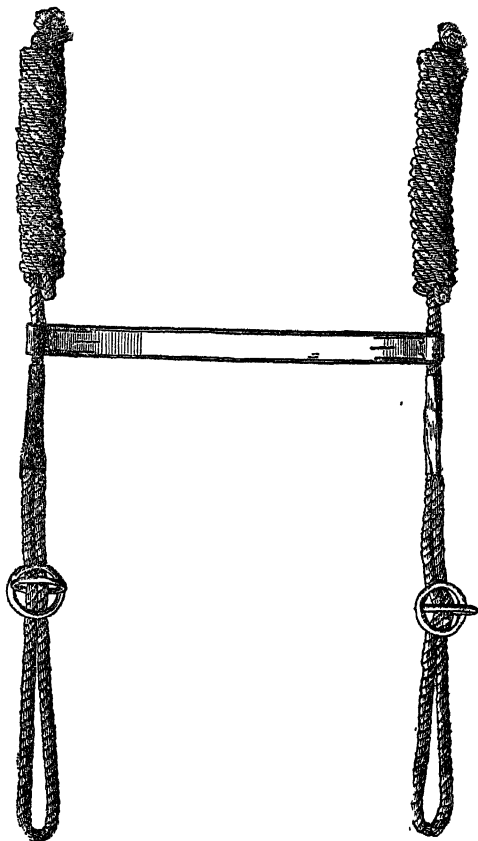


FIG. 15.—Pack saddlery, G.S.—Baggage ropes.

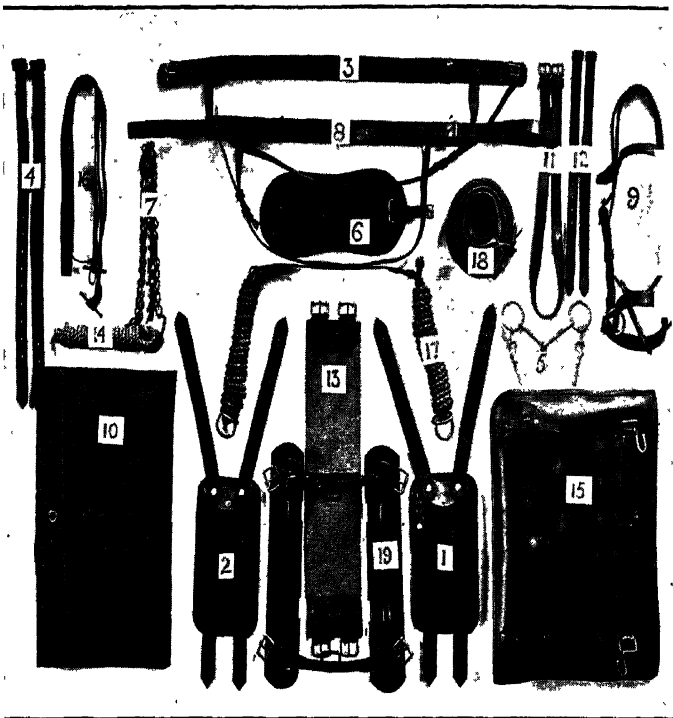
The shorter girth, being wider and of greater lay than the pair of Mark V girths, is stronger and provides greater security. The method of securing the "V" attachment to the side bars decreases the *rock* of the load; the "V" attachment consists

PLATE VII

[To face page 60.]



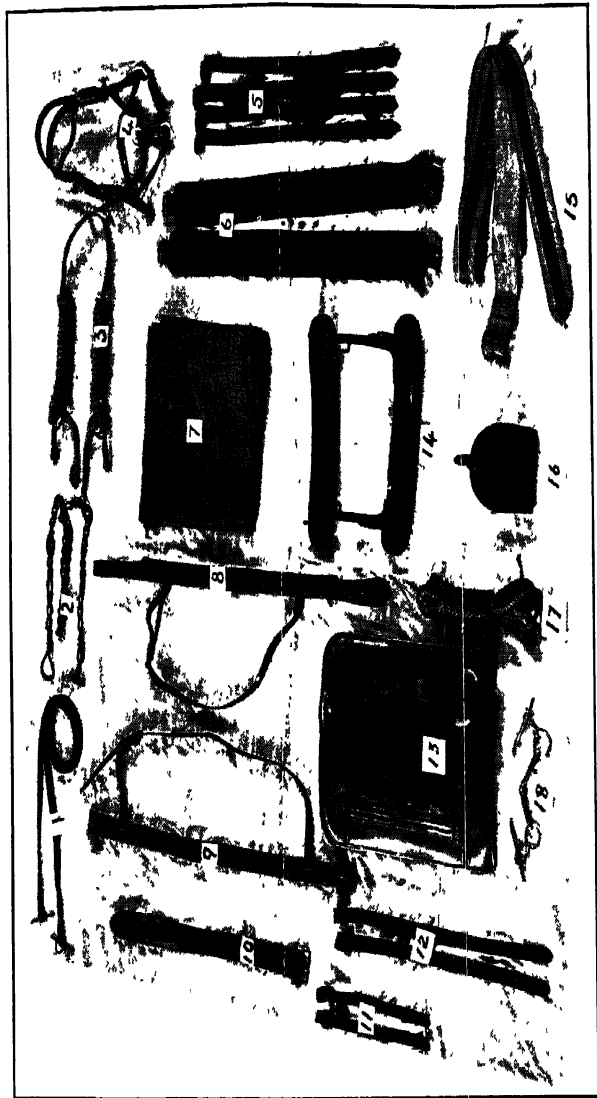
PACK SADDLERY, G.S.—GIRTHS, MARK V.



PACK SADDLERY, G.S.—“ V ” ATTACHMENT.

KEY.

- | | |
|---------------------------------------|---------------------------------|
| 1. Attachment, V-girth, P.G.S., near. | 11. Crupper, P.G.S., Mk. V. |
| 2. Attachment, V-girth, P.G.S., off. | 12. Crupper straps. |
| 3. Breeching, P.G.S., Mk. V. | 13. Girth, P.G.S. |
| 4. Breeching straps. | 14. Cover lashing. |
| 5. Bit, bridoon, P.G.S. | 15. Pannel, P.G.S., Mk. V, off. |
| 6. Case, horseshoe, P.G.S. | 16. Rein, bridoon, P.G.S. |
| 7. Chain, collar, P.G.S. | 17. Ropes, baggage. |
| 8. Collar, breast, P.G.S., Mk. V. | 18. Surcingle, P.G.S., Mk. III. |
| 9. Collar, head, P.G.S., Mk. IV. | 19. Tree, P.G.S. |
| 10. Cover, 6 ft. x 6 ft., Mk. III. | |



PACK SADDLERY, G.S.—OLD PATTERN.

of two straps—front and rear—secured at their upper ends to the side bar by buckles, and at their lower ends by rivets to a plate riveted to the sweat flap. By means of these straps the position of the two girth straps in relation to the saddle may be adjusted to suit the conformation of various animals.

The front strap of the "V" attachment is punched so that its length may be adjusted to suit varying conformations; the near and off straps must be adjusted to an equal length. The rear strap is single and is not adjustable.

For ease in fitting, girths are made in two lengths:—

- i. 29 inches overall,
- ii. 25 inches overall,

and both are six inches wide.

These girths are fitted with two buckles at either end for the girth straps; they are bound with leather and have three leather loops to keep the surcingle in position.

Note.—When the "V" attachment is not used, two girths, Mark V, and four straps, girth, Mark II, are required (Plate VII). The girths are crossed exactly under the animal's body, the off front one being girthed to the near side rear strap and *vice versa*.

6. A complete set of pack saddlery for general service is as follows:—

Pack saddlery, G.S. (Plates VIII and IX)

Bits, bridoon, P.G.S.	...	...	...	...	1
Breechings, P.G.S., Mark V	...	...	...	...	1
Chain, collars, P.G.S., G.S., Mark IV	...	...	...	...	1
Collars, breast, P.G.S., Mark V	...	...	...	...	1
Collars, head, P.G.S., Mark IV	...	...	...	...	1
Cruppers, P.G.S., Mark V	...	...	...	...	1
"V" attachment	...	...	...	...	2
Girths, P.G.S., Mark V	...	...	...	...	1
Pannels, P.G.S., Mark V	...	...	...	pairs	1
Ropes, baggage	...	...	...	"	2
Reins, bridoon, P.G.S.	...	...	...	...	1
Surcingles, P.G.S., Mark III	...	...	...	...	1
Trees, P.G.S.	...	...	...	...	1
Bars, hanging, Mark II (when authorized)	...	...	...	...	2
Covers, 6 feet by 6 feet, Mark III (including 21 feet of lashing)	...	...	...	...	1
Girths, leather (for bars)	...	...	...	...	1
Cases, horseshoe	...	...	...	...	1

In addition, a saddle blanket should be used whenever available, but it is not as yet an article of pack saddlery equipment.

THE HORSE

7. *Saddling-up using a blanket.*—When about to saddle-up, unfasten the neck strap and the near-side connecting strap of the breast collar and attach the girths to the off-side girth straps. Lay in order the breast collar, breeching and girths across the top of the saddle, and secure the whole by passing the crupper under the front arch and over the baggage hooks.

See that the pannels, blanket and back are free from mud and grit. The blanket should be folded to suit the condition of the animal. If the "double fold" method is used (*see* Sec. 20, 1), the blanket should be placed on the back—well to the front, smooth and even, with the selvedge edges on the near side and to the rear, the thick (single) fold to the front.

Place the saddle gently on the blanket with the rear of the pannels just in front of the rear edges of the blanket.

Pull the blanket well up into the arches of the saddle so as to clear the backbone and withers. Draw the blanket and saddle together back into the proper position, so smoothing the hair.

The "V" attachment should be adjusted so that the girth is well back from the elbow (Plate X). The girth should be sufficiently tight to keep the saddle in position; loading loosens the girths.

The head collar is put on in the usual way. The "T"-pieces of the bit are secured by keepers and the "T"-pieces of the reins should be passed through the rings of the bit from the inside. The "T"-piece of the near rein has a ring on it.

The head collar should be so fitted that :—

- i. the cheek-piece is parallel to the cheek bone ;
- ii. the nose band allows two fingers between it and the nose ;
- iii. the throatlash allows four fingers easily between it and the throat—the buckle should come in line with the eye ;
- iv. the brow band allows two fingers between it and the head—it is liable to gall if tight ;
- v. the bit does not wrinkle the corners of the animal's mouth, and is about one inch above the tush or two inches above the corner tooth.

The saddlery should be so fitted that :—

- vi. the breast collar allows one hand's breadth between it and the breast, and rides well above the point of the shoulder ;
- vii. the saddle lies evenly on either side of the backbone, and is clear of the withers and backbone—the front of the

PLATE X

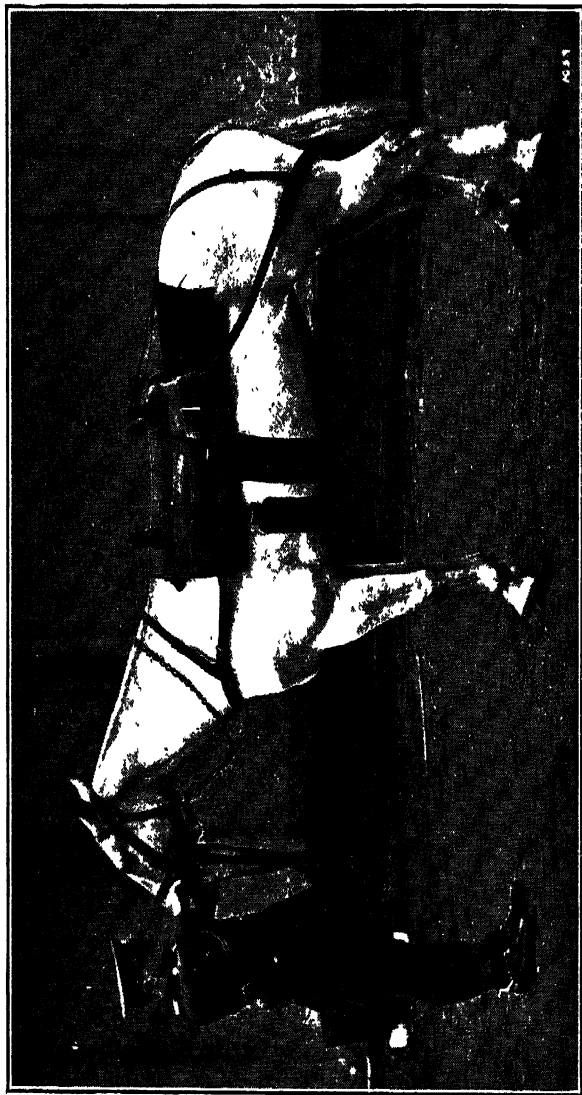
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PACK SADDLERY, G.S.—“V” ATTACHMENT, GIRTHING UP.

PLATE XI

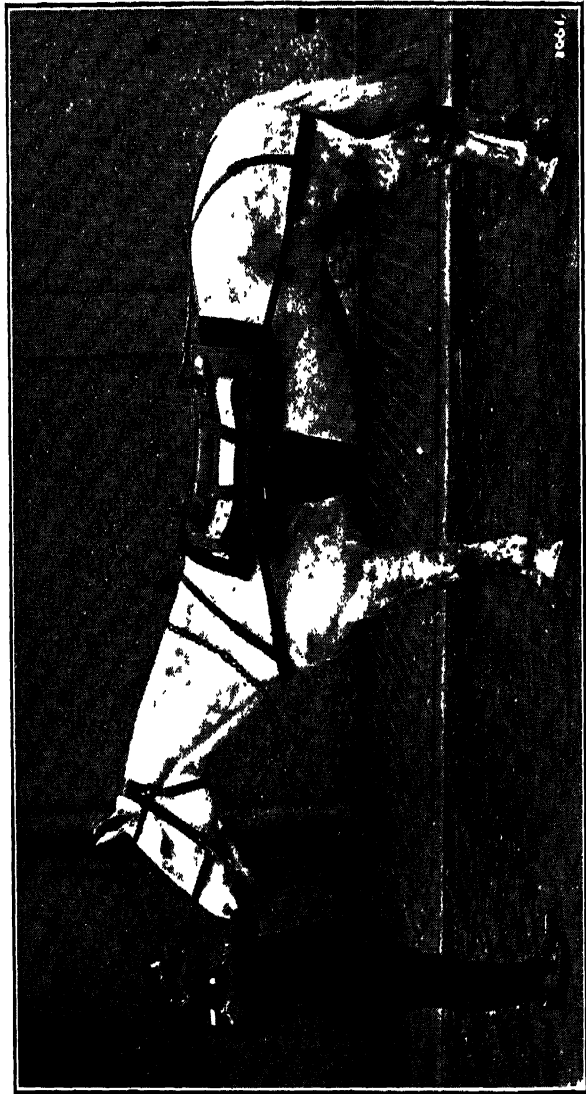
[To follow Plate X.]



PACK SADDLERY, G.S.—COMMON FAULTS IN SADDLING.

PLATE XII

[To face page 63.]



PACK SADDLERY, G.S.—CORRECT METHOD OF SADDLING.

1866.

pannel should be in rear of the play of the top of the shoulder, and the rear of the pannel four fingers clear of the hip ;

viii. the crupper allows four fingers between it and the dock ;

ix. the breeching allows four fingers between it and the quarters, and lies about eight inches below the point of the buttock.

8. *Plate XI* shows a number of common faults in saddling up. The principal faults are :—

i. Pannels back to front.

ii. Saddle too far forward and resting on the shoulder.

iii. Blanket too far back, crooked and not pulled up into the arches.

iv. Girths too far forward and not properly crossed ; one buckle too high on the pannel, and the other too low and touching the mule's side.

v. Breast collar and breeching too low and too loose.

vi. Crupper too loose.

Plate XII shows a horse correctly saddled-up.

THE MULE

9. The saddle should be placed in the middle of the mule's back so as to interfere as little as possible with its free action. The two pannels should contain the same quantity of stuffing, should feel elastic and should have an even bearing on the back and sides throughout. It is best to have a distinct channel between the pannels along the mule's back ; the broader the channel, the better.

The pannels should be so fitted that the saddle rides level along the mule's back and as low as possible. They must not pinch the withers, or touch the backbone, and should allow of at least three fingers being inserted in front and rear of the saddle.

10. *Girths*.—These should be crossed beneath the mule and should be drawn slightly tighter than with riding-saddles, but should be loose enough to allow one finger to be inserted between them and the mule's body when the load is on.

11. *Breast-collar and breeching*.—These should hang from their supporting straps as nearly horizontal as possible and at such a height as will not impede the free action of the limbs or breathing.

12. *Crupper*.—This should not be tighter than is necessary to keep the saddle from shifting forward and should admit the breadth of the hand between it and the mule's croup. Care must be taken that none of the mule's hair remains between

crupper and dock. The tail-piece of the crupper must at all times be kept very soft and pliable.

13. *Bit, head collar and curb-chain.*—As for horses.

14. *Leading-rein.*—This should be fastened to both rings of the bridoon bit ; the Ts of the rein passed through from inside to outside, the reins double in the driver's right-hand, the loop of the rein in the left hand.

The following method of attaching the rein to the bridoon may be adopted to gain more control over restive mules and to prevent mules from stampeding when under fire, etc. :—

- i. Pass one of the Ts of the rein through the near ring of the bit from inside to outside.
- ii. Pass the other T through the off ring of the bit from outside to inside, and then through the near ring from inside to outside.

The rein can now be used in the ordinary way ; when, however, it is required to restrain a restive mule, or it is apprehended that mules may be frightened by coming under fire or otherwise, pull the T of the near rein, thus pulling the rein through the near ring of the bit, pass the loop of the rein in round the mule's nose and haul fairly taut. The rein is now single in the driver's hand and, when hauled on, compresses the mule's nose and stops him.

26. Pack saddlery, camel

1. The varieties of saddlery used for camels in various countries differ greatly ; that shown in Plate XIII is the type now in use in Egypt.

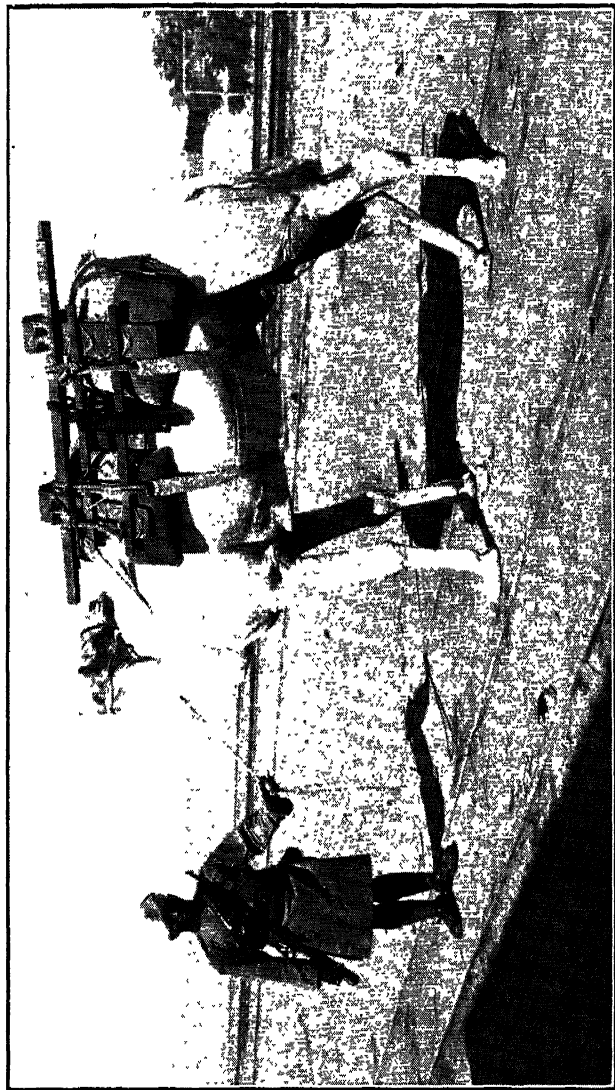
Camels are bought and impressed with their saddlery and are often accompanied by their drivers. The change from native to military equipment is a gradual process in the absence of previous organization.

2. The principles of camel saddle fitting are the same as those for other animals, and anyone who bears in mind that the camel's hump is not intended to carry any weight and who is conversant with the fitting of other saddlery should be competent to saddle a camel.

The first thing to do is to recognize the weight-bearing surface. A look at the animal will at once show that the main weight-bearing surface lies in front of the hump, but on account of the small surface which it presents and by reason of its lying so far forward it is necessary to supplement it with another, so that the load may lie correctly. The centre of gravity of a camel lies very far forward and, if it were arranged that only the surface forward of the hump were used, there would be great danger of the camel falling on its head when

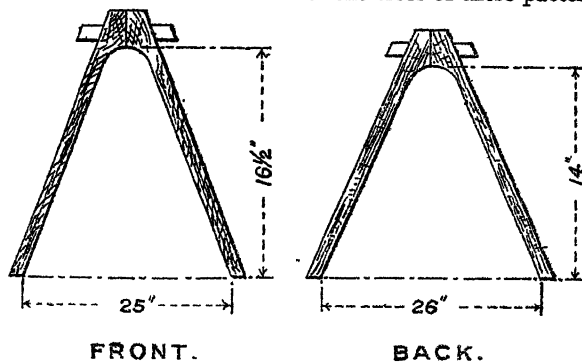
PLATE XIII

[To face page 64.]



going downhill or rising from the *barracked* position. The centre of the load, therefore, has to be carried further in rear and the surface over the loins, though devoid of natural support, has to be utilized. The load must rest on the side sticks and loading bars, which are supported by the pads on the front and rear weight-bearing surfaces.

3. Two types of saddle, the large and the small, known as the improved Baladi pattern, have been evolved. Figs. 16 and 17 show the measurements of the trees of these patterns.



1. Space between front and back trees 18 to 18 1/2"
2. Inside splay of trees, front 25", back 26"
3. Depth of front tree ... 16 1/2"
4. " " back " ... 14"
5. Length of side pole 4" x 1 1/4" x 2"
6. " " side sticks 2—8" x 1 1/4" x 1"

Fig. 16.—Camel pack saddlery. (Heavy-burden saddle trees.)

i. The *large pattern*, or heavy burden, Baladi saddle weighs about 80 lb. It is composed of one front tree, one back tree, two cross-poles, two or four side bars, two front pads, one back pad, one double girth with lateral straps, one breast plate and, in hilly countries, one tail strap.

The trees are of Douglas fir or pine, free from knots and thoroughly seasoned; each tree is made of two parts, held together by means of two stout wedges in the case of large pattern saddles.

The side poles and side bars are of teak, for it must always be borne in mind not only that heavy loads are carried but that a camel will at unexpected moments indulge in a sand bath, with disastrous results to any faulty equipment. The side poles are lashed together on either side of trees and just

below the wedges ; the lashes are of a strong, thin cordage (tent line small) and $1\frac{1}{4}$ lb. of cordage is required for each saddle. Pads are made of a stoutly woven cotton material ; the outer sides are further strengthened either by a kind of hemp sacking, used in the coffee-bean transport trade and known in Egypt as shinfas, or preferably by English-made jute. Shinfas or jute serve the double purpose of saving the outer side from the great wear and tear due to the oscillation of loads, and of preventing the camel from gnawing the pad. The pads are provided with pockets, the front ones at the top and the back ones on the inside at the apex of the angles. Through these pockets the necessary quantities of rice straw

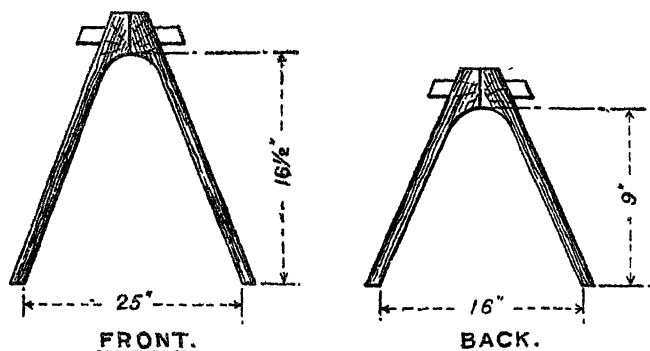


Fig. 17.—Camel pack saddlery. (Light-burden saddle trees.)

are carefully rammed home with specially made ramming tools. The pads are provided with cord lacings, with which they are laced into position at the top and sides of the trees ; these laces go right through the trees and pads and back again—care being taken that they are thoroughly tight—in such a manner that the cordage becomes recessed in the pads ; otherwise, through friction, camels will soon become galled.

The girths are double, with rings of iron at the four ends and lateral straps joining back and front ; they are made of strong cotton webbing, and strong hemp ropes are fixed to the side bars and passed through the rings when girthing up. Breastplates are made of similar material.

ii. The *small pattern*, or light burden, saddle is intended for the use of the light-burden camel, and differs from the heavy-burden saddle chiefly in size ; its weight is 56 lb. In place of two side bars it has only one on each side. The trees

are held together by one wedge, and the back tree and back pad are much shorter than the front.

4. Saddles for Somali camels demand special treatment. The camels are high and broad in the withers and fall sharply away behind, and the saddle is liable to drop and allow the load to settle in the rear of the hump. The Somali camel is used to carrying its load well forward, and various alterations in the small saddle are required to accommodate it :—

i. The straw at the bottom of the front pads should be removed until the pads measure five and a half inches at the top and three inches at the bottom.

ii. The back pad should be stuffed through the pocket until the pad measures nine inches in depth at the back and four and a half inches in depth at the front. The straw withdrawn from the front pads should be sufficient to fill up the back pads.

5. *Fitting*.—i. The gap between the trees should be adjusted until back and front pads are nearly clear of the animal's hump. This is arrived at by carefully tapping the heads of the trees with a mallet in the direction required. The pads are made to fit by either increasing or decreasing the straw in the pads (this is done through pockets provided for the purpose) until they bear gently on the sides but are well clear of the spine; girthing up and loading will do the necessary bedding down. Always girth up the front girth first, and as far forward as possible.

ii. Any tendency to *nip*, due to the narrow trees, must be strictly avoided, as this will lead to inevitable sores or even broken short ribs; similarly a wide rolling saddle will cause trouble to the spinal regions. Both can be avoided by adjusting the angle of the trees, by tapping off the inside face of the heads of the trees in an upward or downward direction, as required.

iii. The front tree is two inches longer than the back tree and is put at right angles to the cross-bar. The back tree is inclined towards the front tree, an inch out of the vertical. The side bars, or side sticks, are fixed to the trees by galvanized wire sockets; they help to support the saddle without making it too rigid and keep the load from touching the camel's body. The object of having two pads in the front tree is to prevent the weight of the load resting on the top of the withers. The pads should be so fitted as to keep the tree at least six inches clear of the withers; this can be done by increasing the straw stuffing according to the thickness of the camel at the withers. The back pad should be so fixed as to prevent any weight being carried on the hump; to attain this object, the back pad

should be pushed forward two inches or more out of the vertical according to the fall of the back from the hump. This pushing forward of the back pad also keeps it clear of the hips and short ribs, which would otherwise be galled by the friction of the pad.

6. *Cacolets* (Plate VI).—The accepted type is a development of the Turkish *çaçolet*. The saddle is the ordinary heavy burden pack saddle adapted to cacolet work by iron framework fittings, one near and one off interchangeable, each clamped to the side of the saddle near the arches and provided with brackets into which fit the iron arms of the bed frame or chair. The bed frames in the lying down cacolets are steadied by *girths*, *steadying*, passing beneath the camel's belly from outside to outside of the bed frame.

This pattern has the extra advantage of being available for ordinary transport work when not required for medical service, and of allowing even the heaviest camels to be used for transporting casualties. The old pattern saddles were so narrow that only small or razor-backed camels could be used.

7. *Native saddlery* (Plate XIV).—Saddles of local pattern will always be of an inferior quality and the continuous strain of active service will result in much damage, which will inevitably be reflected in the percentage of animal casualties. The weak points of local Egyptian saddles, and their remedies, are as follows :—

i. *Defects*.—The arch of the saddle gives way after a time, bends the saddle out and allows the top of the fore-arch to rest on the camel's backbone. This causes a bad gall.

The lower continuation of the rear arch, owing to insufficient support and the weight of the load, becomes forced backwards off the supporting pad and into the camel's ribs, with the result that galls are caused, which in some cases expose the actual bone of the camel's ribs.

ii. *Remedies*.—An iron support, or other suitably shaped metal plate, may be used to strengthen the apex of the fore-arch (Plate XV).

Stretcher bars may be used to tie together the front and rear arch continuations and thus distribute the strain of the load more evenly (Plate XVI).

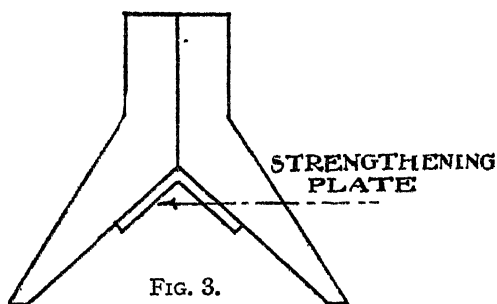
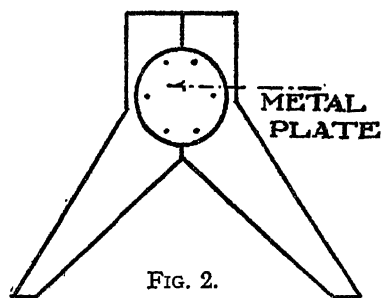
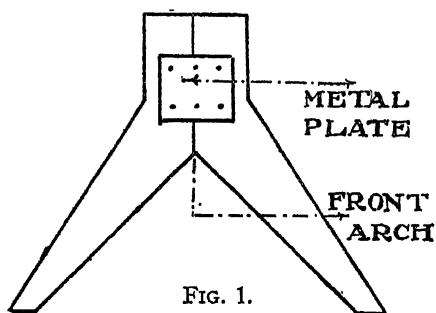
The pads may be secured to the arch continuations by means of leather thongs passing through the woodwork.

Unless of seasoned wood, the projections of the loading bars in front of the front arch and behind the rear arch snap off, rendering the saddle useless. Ash is recommended for these loading bars.



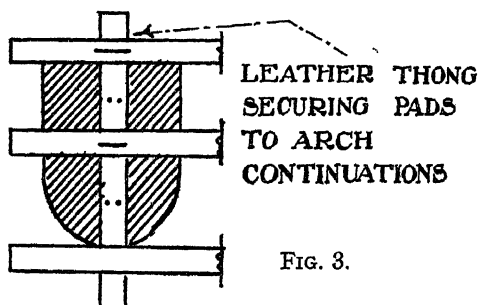
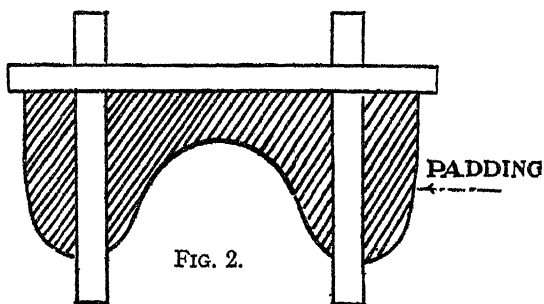
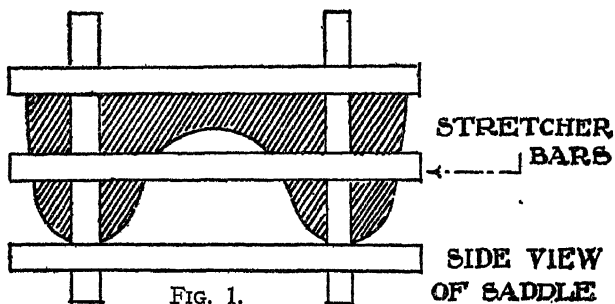
TYPE OF NATIVE CAMEL SADDLERY (IRAQ).

PLATE XV



CAMEL PACK SADDLERY—IMPROVED STRENGTHENING PLATE.

PLATE XVI



CAMEL PACK SADDLERY—STRETCHER-BARS.

To face page 71.]

PLATE XVII



NATIVE HEAD COLLAR.

Any expense and labour incurred in providing and maintaining good saddlery is handsomely repaid.

8. *Miscellaneous.* i. *Head collar* (Plate XVII).—The native type, which fits loosely under the jaw with two metal plates, with the edges turned in and sharpened so as to act as a rough curb, is cruel and its use is abused by native drivers. The standard head collar has a curb and the chain runs freely through the metal ring.

ii. *Girths, breastplates.*—A girth and a breastplate are necessary. The native driver, working with his own camel or with a few at a time, relies simply on balancing the load; once loaded, the camel moves at his own pace on a flat track. Military camels, relatively unskilfully loaded and moving in formation, complying with rules of the road and of necessity led by camelmén, move in accordance with a pace set from the front. Loads are consequently liable to shift, from a variety of causes, unless the saddle is securely supported by a girth round the belly and by a breastplate.

iii. *Loading ropes.*—Loading ropes are made of both cotton and palm fibre. The latter are useless, since they are not strong enough to withstand the strain imposed on them; the former are expensive. Manilla rope hardens in wet. A composite rope—two strands of fibre to one of hemp—is a satisfactory compromise.

iv. *Rugs.*—Canvas rugs, lined with blanket or other stout woollen material, with girths and throat strap, are necessary in the winter on a scale of two for each animal.

v. *Feed sacks.*—Nosebags and canvas basins and buckets are unsatisfactory. Nosebags preclude check and basins promote waste. Split five-bushel sacks spread in a ground manger are a useful feeding cloth, large enough to prevent waste and sufficiently open to allow of feeds being inspected.

DISPOSAL OF HARNESS AND SADDLERY

27. General guide to disposal in harness rooms

(Plate XVIII)

1. Key to Plate XVIII (facing page 72).

<i>Off set.</i>						<i>Near set.</i>
1	Traces, wire, adjustable, pairs	...	...	...	...	1
2	Pads, collar, with straps, collar pad	...	...	...	...	2
3	Strap, neck, attached to breast collar	...	...	...	...	3
4	Neck-piece, pole-bar	...	...	...	...	4
5	Breeching	...	...	...	...	5
6	Collar, breast	...	...	...	...	6

1. Key to Plate XVIII—*continued*

<i>Off set.</i>							<i>Near set.</i>
7	Collar, head	...	...	...	...	...	7
8	Bit, portmouth, reversible	...	...	...	...	...	8
9	Straps, hip, long, wheel	...	...	...	...	...	9
10	Whip, driver's. Leggings, driver's	...	...	...	...	...	10
11	Reins, bit (buckled to bit)	...	...	...	...	...	11
12	Blanket, saddle	...	...	...	...	...	12
—	Saddle, universal, with numnah pannels	...	...	...	...	...	13
—	Surcingle	...	...	...	...	...	14
—	Stirrups	...	...	...	...	...	15
—	Leathers, stirrups	...	...	...	...	...	16
—	Girth (with surcingle over it)	...	...	...	...	...	17

2. The *saddle*, with stirrups run up to the top of the leathers, is hung from a small peg between the two harness pegs, the blankets being placed on the floor beneath the sets or, if for any reason this is not possible, over the pegs and under the breast collars.

The *breast-collar* is hung on the harness peg by the padded neck-strap. The *traces* are hung by hooking the "Ds" on to small pegs on each side of the harness peg. In the case of lead harness the short traces are hooked to the end link of the chains attached to the tugs and hang straight down.

The *bridle* is hung on the harness peg as if on the horse's head, the rein hanging down from the bit.

The *breeching* is hung in rear or under the padded neck strap.

The *leggings, driver's*, are hung on a small peg below the harness peg for the riding set and on a level with the cantle of the saddle, by the top strap, all the straps being buckled.

The *whip* is hung by the hand loop on another small peg below the harness peg for the off set, on a level with the cantle of the saddle.

The *surcingle* for the off horse (not shown in the plate) may be placed coiled on the blanket of the off set.

3. *Saddlery*.—The *bridle* should be hung up complete, as on the horse's head, the curb hooked over the front of the bit.

The *saddle* is placed on the peg, cantle outwards, with the surcingle and girth buckled as if on the horse. The stirrups hang at riding length inside the backband of the head collar.

The *nose-bag*, if not in use, is kept with the other articles of horse kit.

4. The method of laying out harness for inspection in skeleton order is shown in Plate XIX. In this plate, for purposes

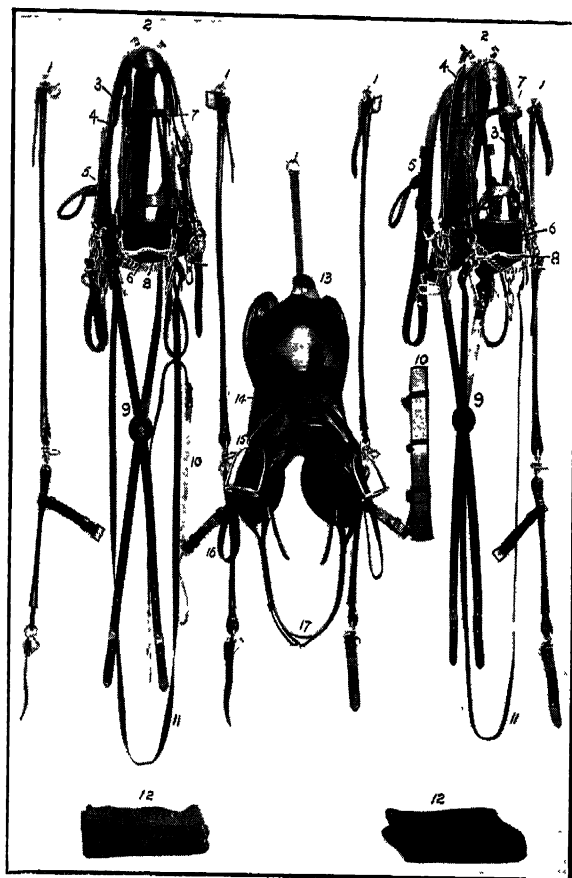
PLATE XVIII

[To face page 72.

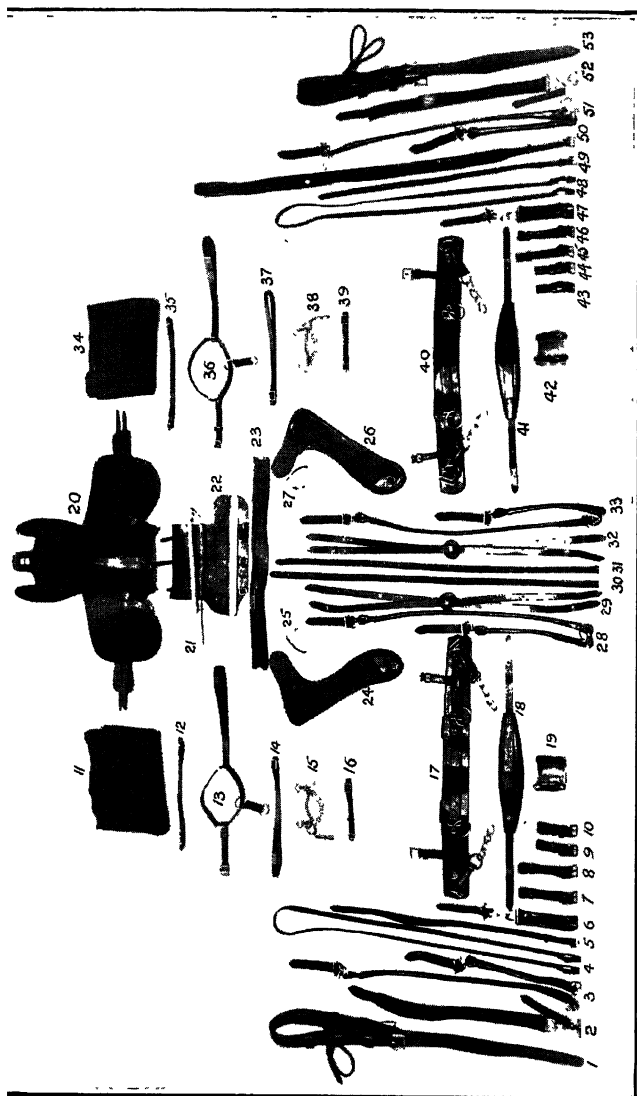
WHEEL, DOUBLE SET.

OFF SET

NEAR SET.



SADDLERY AND HARNESS IN HARNESS ROOM.
For key see text, pages 71 and 72.



SADDLERY AND HARNESS LAID OUT FOR INSPECTION IN SKELETON ORDER.

of clearness, the harness is shown as laid out on the bare ground ; for practical purposes it should be placed on the blankets spread out on the ground.

5. Key to Plate XIX.

- | | |
|--|---|
| 1. Breeching. | 28. Trace, wire adjustable. |
| 2. Neck-piece, pole-bar
(strap portion). | 29. Straps, hip, long, wheel. |
| 3. Trace, wire adjustable. | 30. Leather, stirrup. |
| 4. Reins, bit. | 31. Leather, stirrup. |
| 5. Throat lash. | 32. Strap, hip, long, wheel. |
| 6. Neck-piece, pole-bar
(buckle portion). | 33. Trace, wire adjustable. |
| 7. Tug for strap, hip, long. | 34. Blanket, saddle. |
| 8. Ditto. | 35. Browband. |
| 9. Tug for breeching. | 36. Head collar (remainder
of). |
| 10. Ditto. | 37. Head bridle (strap por-
tion). |
| 11. Blanket saddle. | 38. Bit, portmouth, re-
versible. |
| 12. Browband. | 39. Head bridle (buckle por-
tion). |
| 13. Head collar (remainder
of). | 40. Collars, breast. |
| 14. Head bridle (strap por-
tion). | 41. Strap, neck. |
| 15. Bit, portmouth, re-
versible. | 42. Pad, collar (with straps). |
| 16. Head bridle (buckle por-
tion). | 43. Tug for breeching. |
| 17. Collars, breast. | 44. Ditto. |
| 18. Strap, neck. | 45. Tug for straps, hip, long. |
| 19. Pad, collar (with straps). | 46. Ditto. |
| 20. Saddle, universal. | 47. Neck-piece, pole-bar
(buckle portion). |
| 21. Whip, driver's. | 48. Reins, bit. |
| 22. Leggings, driver's. | 49. Throat lash. |
| 23. Girth. | 50. Surcingle. |
| 24. Pannel. | 51. Trace, wire adjustable. |
| 25. Stirrup. | 52. Neck-piece, pole-bar
(strap portion). |
| 26. Pannel. | 53. Breeching. |
| 27. Stirrup. | |

28. General guide to disposal in bivouac

1. Saddlery and harness, wrapped in the harness wrappers, is laid down one yard in rear of the line of heel-pegs.

2. *Saddlery*.—The *saddle* complete is placed on the ground resting on the pommel ; the stirrup irons are hooked on the points of the side bars.

The *bridle* is placed with the head piece of the bit on the side bars.

The whole is wrapped in the harness wrapper.

3. *Harness* :—

The *breast-collar* is placed on its lower edge in a circle.

The *breeching* is coiled round it.

The *traces* are round the breeching.

The *saddle* is placed on top, seat uppermost, the bottom of the flaps being turned up inwards—this keeps the breast-collar from being crushed when the harness is tied up.

The whole of the head gear is laid across the top of the seat.

The *legging* is placed inside the breast-collar under the saddle of the riding set.

The *whip* is placed inside the breast-collar of the off set.

CHAPTER III

EQUITATION

29. General principles ... ..	75

1. The subject of equitation includes two main headings, namely, the training of the soldier to ride and the training of the remount.

These must be carried out on similar lines so that the horses, when trained, should know what is required of them while the trained man knows how to communicate his wishes to his horse.

Equitation also deals with riding difficult horses, retraining horses which have been spoilt, curing certain well-defined evil tendencies such as refusing, and miscellaneous subjects such as leading.

TRAINING OF THE SOLDIER

30. The standard required of the mounted soldier

1. To be a good military horseman, the rider should :—
 - i. Have a well-balanced and a strong seat independent of the reins.
 - ii. Be able to apply correctly the aids by which the horse is controlled.
 - iii. Be capable of riding across country.
 - iv. Be capable of covering long distances on horseback with the least possible fatigue to his horse and himself.
 - v. Be able to use his horse to the utmost advantage in action.
 - vi. Under proper directions be able to train an unbroken horse and improve a badly trained one.

2. All officers, in addition to being good military horsemen and instructors in riding, must be able to train and direct the training of remounts.

31. The paces of the horse

1. The following table shows the regulation paces.

The walk, the trot and the gallop are the paces of drill.

These, with the addition of the "slow gallop", are the paces of manœuvre.

Pace (1)	Distance covered in one hour (2)	Distance covered in one minute (3)	Time taken to cover $\frac{1}{4}$ mile (4)
	Miles.	Yards.	Min. Secs.
Walk	4	117	3 45
Trot	8	235	1 52
Canter	9	264	1 40
Slow gallop	12	352	1 15
Gallop	15	440	1 0

2. The commands "WALK OUT", "TROT OUT", "WALK SHORT" and "TROT SHORT" are for use in the riding school to increase or decrease the pace when required.

3. i. The trot is a pace of two time on alternate diagonals, that is near fore and off hind come to the ground together, then off fore and near hind. In the "bumping trot" the weight of the body comes on to the saddle as each diagonal comes to the ground. Every leg of the horse therefore does its fair proportion of work. The "bumping trot" is, however, tiring to the rider and upsets the balance of the horse.

ii. The "rising trot" is therefore the normal method of sitting a horse when trotting. In the "rising trot" the weight of the body always falls on and is thrown up by the same diagonal. All four legs do not therefore do their fair share of work. For this reason men should be taught to change the diagonal at the trot.

Practice in changing the diagonal also helps to teach recruits to use either leg with equal ease.

iii. The "canter" is a pace of three time in which the leading fore leg and leading hind leg are on the same side. If a horse is leading on the off pair, the sequence of locomotion is as follows :—

- (a) Near hind.
- (b) Left diagonal (near fore and off hind).
- (c) Off fore.

4. The slow gallop is useful for scouts and others who have to cover long distances at a fast pace.

Both the slow gallop and the gallop are paces of four time in which the feet follow one another with a period of suspension between the coming down of the leading fore-foot and the opposite hind-foot. As in cantering, the leading fore-leg and leading hind-leg are on the same side.

32. Terms used in equitation

1. "*Right rein*", "*Left rein*".—A horse is said to be on the right (or left) rein when he is moving on a line which curves to the right (or left).

2. The "*trot*" is a pace of two time and from one diagonal to the other. "*Right diagonal*", off fore and near hind. "*Left diagonal*", near fore and off hind. Rising at the trot, the rider is said to be on the right diagonal when his seat comes on to the saddle at the moment when the horse's off fore and near hind come to the ground.

3. "*True*".—A horse is said to canter or gallop "*true*" when the leading fore-leg and leading hind-leg are on the same side.

4. "*Disunited*".—A horse is said to canter or gallop "*disunited*" when the leading hind-leg is on the side opposite to the leading fore-leg.

5. "*Balanced*".—A horse is said to be "*balanced*" when his own weight and that of his rider is distributed over each leg in such proportion as to allow him to use himself with the maximum ease and efficiency at all paces.

The head and neck form the governing factors in weight distribution, and it is by their position that the horse carries his centre of gravity forward or backward as his paces are extended or collected.

6. "*Collected*".—A horse is said to be "*collected*" when his head is raised and bent at the poll, the jaw relaxed and his hocks brought well under him, so that he has the maximum control over his limbs and is in a position to respond instantly to the least indication of his rider.

7. "*Go large*".—A rider is said to "*go large*" when he is moving round a riding school or manège.

8. *The aids*.—The signals by means of which the rider conveys his intentions to the horse, and which the horse learns to understand and obey.

9. *Lateral aids*.—The aids applied by the hand and leg of the rider on the same side of the horse.

10. *Diagonal aids*.—The aids applied by the hand and leg of the rider on opposite sides of the horse.

33. General principles of instruction

1. The object of military equitation is to turn out bold and skilful horsemen who have such control over themselves and their horses that they are able to concentrate their attention

on defeating the enemy or carrying out any other task without expending any conscious effort on riding.

2. The instruction of the recruit should be divided into four stages, as under :—

- i. Drill with the horse for the purposes of mounting and dismounting and other movements round and about his horse, and the position of "attention" mounted (Sec. 37). Training in this stage will, in the case of a recruit, be carried out during the period of his physical training course.
- ii. Instruction in the correct position on a horse and the elementary use of the aids.
- iii. Instruction in the application of the aids for simple movements.
- iv. Instruction in more advanced horsemanship, such as riding across country and using the arms when mounted.

Stages i and ii may be combined ; stage iv should not be begun until the recruit is thoroughly instructed in stages ii and iii, respectively.

The following syllabus may be taken as a guide when the recruit starts riding school :—

Stage (1)	Order (2)	Approximate number of lessons (3)	Objects and principal exercises to practise in order to attain these objects (4)
I.	Dummy horses or very quiet horses in a closed school. Snaffles or curb chain looped up.	5 to 10	<i>Equitation at the halt.</i> All movements round the horse. Mounting and dismounting with and without stirrups. Correct position in the saddle. Fitting stirrups mounted and rough method of fitting from the ground. How to hold the reins. How to lengthen and shorten reins and stirrups. All balance exercises. Activity exercises.
II.	Very quiet horses in closed school. Neck straps. Snaffles.	10 to 15	<i>Position—Confidence—Seat and balance.</i> Work in closed school at walk. 1st and 2nd trotting lessons. Work at walk and trot. Elementary balance exercises. Improve position. Explanation of elementary aids for increase and decrease of pace and simple turns.

Stage (1)	Order (2)	Approximate number of lessons (3)	Objects and principal exercises to practise in order to attain these objects (4)
	Quiet trained horses. Neck straps. Snaffles.	10 to 15	<i>Maintenance of position.</i> Improvement of balance and seat. 3rd trotting lesson. Short periods of riding with- out stirrups and reins. Balance exercises on the move.
	Ditto, but begin riding outside the school.	15 to 20	<i>Strengthen seat—Position of hands—Accuracy in applica- tion of simple aids.</i> Turns and circles at walk and trot. 1st and 2nd cantering lessons. Jumping, stage I—Confidence and acquiring an indepen- dent seat. Vaulting lesson. Turns and circles at all paces.
III.	Curb adjusted. Neck straps.	15 to 20	<i>Revision, with more advanced instruction in action of the hands and harmony of the aids—Gaining control.</i> Collection. 3rd cantering lesson. Rein back lesson at the walk. More advanced jumping with- out reins.
	Ditto.	15 to 20	<i>Utilizing control.</i> Bending lesson—1st and 2nd stage—at the walk. Turning on the haunches at the halt and walk. Jumping stage II—Jumping with reins. Riding across country.
IV.	Ditto.	35	<i>Advance equitation and applica- tion.</i> Rein back from trot and canter. Bending lesson at trot and canter. Turning on haunches at trot and canter. Change at the canter. Riding with one hand. Troop drill. Leading horses. Progressive use of the weapon mounted. The gallop.

N.B.—This full course is based on reaching the standard of equitation laid down in the manual with full training facilities. Should circumstances necessitate accepting a modified standard, any curtailment should be made principally from the later stages, as the early ground work is of vital importance.

3. When the recruit is dismissed, he should be able to ride an average horse easily at all paces over country and use his arms efficiently when mounted. Training must not, however, end with this, and all men should be practised continually until they can ride awkward horses, train remounts and retrain spoilt horses. Numerous opportunities of giving this instruction will present themselves on the way to and from other work.

34. General hints to instructors

1. It is necessary that an instructor should be a practical horseman and have a thorough knowledge of the effects of different types of conformation in man and horse.

2. Recruits should be carefully taught from the first how to put on and fit their saddles and bridles. The ill-effects resulting from bad-fitting saddlery should be explained to them. Examples of horses badly saddled and bridled should be shown to the men, and they should be made to point out what is wrong and how the mistake should be put right. They should also be taught clearly how the bit acts on the bars of the mouth and how it should be fitted.

3. An instructor must be mounted, not only to enable him to superintend his class properly, but also to demonstrate what he requires, as a recruit will have great difficulty in learning his work by mere verbal instruction, but will more quickly do so by copying an expert horseman. He should, when possible, have a mounted assistant, who can be most useful in correcting the position of the pupils.

4. A feature of all instructional work should be its quietness ; an instructor should never shout and must always keep his temper. He must endeavour from the first to create a spirit of emulation amongst his pupils and avoid keeping back the more forward for the sake of the others.

Explanations should be given at the halt, or when moving at slow paces.

5. An instructor must aim not only at making his lesson progressive, but also as interesting as possible. His instruction can be varied by making the pupils play games, such as picking up a handkerchief off a stick as they jump a fence.

6. The first portion of the early training can be carried out much more quickly in a riding school than in the open. The horses are under better control, and the nervousness natural to beginners and usually felt by recruits is greatly lessened, for they know that their horses cannot run away and there is nothing to distract the attention of men or horses. The more

advanced training must, however, always be carried out in the open, in order that men may learn real control over the horses and improve their hands. They should be encouraged to ride independently, so as to get into the habit of making their horses go where they like and do what they wish. As the men improve, the instructor should accustom them to riding under as varied conditions as possible.

7. The first object of the instructor is to give his pupils confidence, to teach them balance, the knee and thigh grip, and to sit well down in the saddle. The longeing whip must not be allowed inside the school; it does more harm than good, frightens the other horses and upsets the men. If necessary, the recruit may be allowed to carry a stick or whip.

8. Falls should be avoided; they tend to spoil the beginner's nerve and retard his progress. To this end the recruit's stirrups may be connected in the initial stages by a strap passing under the horse's belly, of such a length that the men's knees are not drawn away from the saddle. The strap saves falls, as it prevents the rider's legs from flying out far in any direction, and the confidence which it engenders enables him to acquire balance more quickly. It must not be used in jumping obstacles over two feet high.

9. More horses are spoilt from being "jobbed" in the mouth than from any other cause, particularly when jumping; hence the immense importance of teaching men from the first to leave their horses' heads alone except for the purpose of control and for applying particular aids.

This does not mean that a recruit must be taught to ride over his fences with a long or a loose rein. He must hold his reins sufficiently short to maintain a firm elastic contact with his horse's mouth throughout.

10. An instructor must be careful not to keep men and horses too long in one position, or to repeat a movement too often. Such exercises as reining back, passaging or bending must not be performed for more than a few minutes at a time.

11. In stage I dummy horses or, in default of these, very quiet horses should be used so as to enable the recruits to obtain confidence.

In the later stages more sensitive and responsive horses should be employed. These, by obeying freely the indications of their riders, will help to teach the recruits how to use the aids lightly and correctly, and at the same time, by resenting careless or faulty handling, will prevent riders from forming bad habits.

12. The words "right" and "left", "off" and "near", should be used by instructors, and not "inner" and "outer" when applied to reins and legs.

13. Throughout the course instructors must remember that their object is to produce a ride of good individual horsemen and not a well-drilled ride. To this end individual work should be encouraged as much as possible, subject to proper supervision.

14. A sample set of lessons, which is intended as a guide to instructors in preparing and carrying out their work, is given in Appendix I.

First Stage

35. Drill (dismounted with the horse)

1. Squads should not exceed 12 in number, and should parade in line dismounted.

2. "STAND TO YOUR HORSES".—The man stands at *attention*, as for foot drill, on the near side of the horse, his toes in line with the horse's fore feet. The left cheek rein is held in the right hand near the ring, back of the hand to the right; hand as high as the shoulder, arm at full extent. If the cheek reins have been taken over the horse's head, the end will be held in the left hand, which will hang down by the side without constraint.

This is the position of "attention".

3. "STAND AT EASE".—The right hand slides down the reins to the full extent of the arm, the end of the cheek reins being retained in the left hand. The position of the man's legs and feet is the same as in foot drill.

If the cheek reins have not been taken over the horse's head, they will be held in the right hand only, the left arm hanging by the man's side.

4. "ATTENTION".—As above.

5. "IN FRONT OF YOUR HORSES".—Each man will take a full pace forward with the right foot, turn to the right-about and take one rein in each hand near the ring, still holding the end of them in the left hand, if the reins are over the horse's head; hands and elbows to be as high as the shoulders.

This is the position in which a man should stand when showing a horse to an officer.

6. "OFF SIDE STAND TO YOUR HORSES".—Each man will take a full pace forward with the left foot to the horse's off side, turning right-about, the left hand holding the right rein near the ring, back of the hand to the left, hand as high as the

shoulder, the right hand taking hold of the ends of the reins and hanging down by the side without constraint.

7. "IN FRONT OF YOUR HORSES".—Each man will take a full pace forward with the left foot, turn left-about and resume the position before described, the left hand taking the ends of the reins.

8. "STAND TO YOUR HORSES".—Each man will take a full step forward with the right foot to the horse's near side and turn left-about.

9. "QUICK MARCH".—Each man will move off holding the reins as described in para. 2 above.

10. "SINGLE FILES RIGHT (OR LEFT)—QUICK MARCH".—Each man will move off to the right (or left) in succession, one horse-length from the file in front of him.

11. "CHEEK REINS OVER".—The reins being on the horse's neck, cheek reins nearer the head than the curb reins, take the curb reins by the middle and lift them over the cheek reins, placing them again on the horse's neck nearer the head than the cheek reins. Then take the cheek reins by the middle and take them over the horse's head. Then bring the cheek reins up from between the curb reins.

12. When a man leads a horse past an inspecting officer, he should place himself on that side of the horse which is further from the inspecting officer.

The reins should be taken over the horse's head and held midway between the bit and the end, first finger between the reins, the slack of the reins being held in the disengaged hand.

13. To run a horse in hand, the reins are brought over the horse's head and held in the hand as described in para. 12, above; the disengaged hand holding the slack of the reins should be placed slightly behind the hip bone.

The man should run straight to his front with the rein slack enough to allow the horse to carry his head naturally. He should look to his front and should avoid looking at the horse. If the horse hangs back, the man should not pull at his head, but an assistant should make the horse move forward.

When turning the horse, the man should move round the horse and not swing the horse round him.

14. When leading through a narrow gate or doorway, the man should move slowly, taking care that the horse's hips clear the posts of the door. He should walk backwards, holding the head collar with both hands, one on either side of the horse's head.

36. Drill (riding with and without rifle)

1. *Mounting and dismounting with stirrups* :—

i. **Prepare to Mount—One.**

Turn three-quarters right-about and take the end of the reins between the forefinger and thumb of the right hand, raising the hand above the withers.

Two.

Take hold of the reins in the left hand properly separated for riding. Slide the left hand down the reins until they are a suitable length to prevent the horse moving.

Grasp the horse's neck or mane just in front of the withers with the left hand. Drop the spare end of the reins to the off side of the horse's neck.

Take the stirrup in the right hand.

Three.

Place the left foot in the stirrup; toe down, knee pressed against the saddle; then place the right hand on the rear arch of the saddle.

ii. **Mount—One.**

Spring up from the right foot, bringing both heels together, the body upright.

Two.

Move the right hand from the rear arch to the front arch of the saddle, at the same time pass the right leg over the saddle and allow the body to come gently into the seat of the saddle.

Three.

Remove the left hand from the neck; at the same time place the right foot in the stirrup without looking down and assume the position of "Attention".

iii. **Prepare to Dismount—One.**

Take all the reins in the left hand and grasp them with the right hand behind the left, the right foot quitting the stirrup.

Two.

Slide the left hand down the reins until they are of suitable length to prevent the horse moving, hook the fingers of the left hand on the horse's neck, drop the reins from the right hand and place it on the front arch of the saddle.

iv. Dismount—One.

Pass the right leg over the saddle, placing the right hand on the rear arch of the saddle, heels together.

Two.

Lower the right foot to the ground, remove the left foot from the stirrup.

Three.

Turn to the left and assume the position of "Stand to your horses".

2. Mounting and dismounting without stirrups :—**i. Prepare to Mount—One.**

Turn to the right and then take a pace to the right. Take the end of the reins between the forefinger and thumb of the right hand, raising the hand above the withers.

Two.

Take hold of the reins in the left hand properly separated for riding and slide the left hand down them until they are of suitable length to prevent the horse moving; place the left hand on the front arch of the saddle, drop the spare end of the reins to the off-side of the horse's neck and place the right hand on the rear arch.

ii. Mount—One.

Bend the knees, spring up and, by straightening the arms, raise the body above the saddle.

Two.

Pass the right leg over the saddle, at the same time placing the right hand on the front arch of the saddle, lower the body gently into it and assume the position of "Attention".

iii. Prepare to Dismount.

Place both hands on the front arch of the saddle, back of the hands up.

iv. Dismount.

Throw the weight of the body forward on to the hands, and, throwing the right leg over the saddle, alight on the toes and assume the position of "Stand to your horses".

3. Riding with the rifle :—

Whenever a man dismounts, he does so with his rifle, if carried.

4. *To mount.*

Prepare to Mount.

Transfer the rifle to the right hand, grasping it at the muzzle, turn three-quarters right-about and take up the reins as described in para. 1, i, above; place the rifle on the off side of the horse, magazine to the front, and then grasp it with the left hand about three inches below the muzzle.

Mount.

Mount as usual, raise the rifle with the left hand, seize it with the right hand in front of the magazine and throw it backwards to the full extent of the arm, lower it into the rifle bucket and push it home.

5. *To dismount.*

Prepare to Dismount—One.

Seize the rifle with the right hand at the small of the butt.

Two.

Draw the rifle out of the bucket far enough to allow the hand to regrasp it just in front of the magazine; raise it, approximately horizontal, so as to clear the front of the saddle.

Three.

Lower the butt on the near side under the bridle hand, and hold the barrel with the left hand about three inches below the muzzle, magazine to the front, butt downward. Let go the rifle with the right hand.

Four.

Complete the motions as described in para. 1, iii, above.

Dismount.

Dismount as described in para. 1, iv, above, bringing the rifle to the position of the "Order" at the left side.

6. *To draw arms.*

Draw Arms—One.

Grasp the rifle at the small of the butt.

Two.

Draw the rifle slightly out of the bucket and grasp just in front of the magazine.

Three.

Retaining the same grasp, bring the rifle to the "Advance".

7. The advance.

The rifle is held with the right hand in front of the magazine, right hand resting on the upper part of the right thigh, thumb and fingers round the rifle, muzzle pointing to the left front and just clear of the horse's near ear, magazine to the front.

*8. To carry arms.***Carry—Arms.**

From the "Advance"—Without moving the right hand from its grasp of the rifle, place the butt on the upper part of the right thigh, the muzzle leaning to the front, at about an angle of 45 degrees, and in line with the right eye, magazine to the left, back of the hand down, arm slightly bent, elbow close to the side.

*9. To return arms.***Return—Arms.**

This is done in one motion as follows:—Raise the butt of the rifle and lower the muzzle into the mouth of the bucket, pressing the rifle well home with the right hand, magazine to the rear, taking care that the bolt lever does not catch on the edge of the bucket.

37. Drill (positions of attention and sit at ease in the saddle).

1. *Attention* (reins in both hands).—The seat should be in the centre of the saddle. The positions of the head, neck and body are the same as when dismounted. The arms should hang easily from the shoulders, upper arm perpendicular and lightly touching the sides (Plate XX). Hands slightly below the level of the elbows about four inches apart, wrists slightly bent, back of the hands outwards and slightly turned up, thumbs pointing obliquely across each other. Flat of the thighs and inside of the knees lightly pressed against the saddle, legs from the knees downwards slightly behind the perpendicular, toes at a natural angle, heels forced downwards and pressure of the stirrup iron on the sole of the boot.

Note.—In riding with the reins in one hand, the disengaging arm should hang easily from the shoulder, the hand holding the reins being opposite the centre of the body.

2. The horse should be at attention as well as the man, that is, "collected".

3. On the command "SIT-AT-EASE", the reins should be relaxed by dropping the left hand on to the front arch of the saddle. The right hand should rest on the left, back uppermost.

PLATE XX.



POSITION OF "ATTENTION" MOUNTED.

38. How to hold the reins and lengthen and shorten stirrups

1. The reins should be normally held in the left hand only, curb reins outside. In the case of beginners, and in riding young or awkward horses, both hands should be used.

Occasionally the left hand may be required to be free, as in leading another horse, in which case the reins of the ridden horse can be held in the right hand.

The rider should maintain an even bearing on the horse's mouth, play being allowed from the fingers, wrists, elbows and, if necessary, shoulders.

2. *Reins in the left hand* :—

- i. *Cheek reins only*.—Take the two reins in the left hand, the right rein between the first and second fingers, and the left rein outside the fourth finger, the slack of the rein passed across the palm of the hand and between the first finger and thumb, and hanging down the off shoulder. Secure the reins by closing the thumb on the forefinger.
- ii. *All four reins in the left hand*.—Place the little finger of the left hand between the two left reins (curb rein outside), the third finger between the two cheek reins, the second finger between the right reins (curb outside), the slack of the reins to hang over the forefinger and down the shoulder of the horse. Secure the reins by closing the thumb on the forefinger.

3. *Reins in both hands*.—Whether using single or double reins, first take them in the left hand as described above. Then place the right hand on the right reins, little finger between the two right reins (inside the right rein if only one), and remove them (it) from the left hand, the slack of the reins passing between the first finger and thumb of each hand. The hands should be about four inches apart.

To give somewhat lighter hands for training remounts, the slack of the reins may be allowed to come out of the palms of the hands between the first and second fingers of each hand.

4. *Two hands on the reins*.—When riding with four reins in the left hand, the rider may find it necessary to assist himself in controlling his horse by placing his right hand on the reins. This can be done by placing the little finger of the right hand between the two right reins close up to the left.

5. *Curb reins*.—To take up curb reins, place all four reins in the left hand. Pass the right hand under the right curb

rein and grasp both cheek reins, pulling them forward through the left hand till the centre of the reins is resting on the third finger of the left hand. The cheek reins will then hang down between the curb reins and the horse's neck.

To take up all four reins, grasp the end of the cheek reins with the right hand and draw them through the left until they are the required length.

In riding on the curb reins, the ball of the foot should be placed on the stirrup and the rider should not rise to the trot.

6. On certain occasions, such as in increasing speed or riding across country, reins should be shortened.

To shorten the reins.—If riding with all four reins in the left hand, grasp the slack of the reins with the right hand and draw the reins through the left hand until the desired length is obtained.

If riding with two reins in each hand, take all the reins in the left hand and shorten as above.

To lengthen the reins.—Allow sufficient rein to slip gently through the fingers.

7. Recruits should be well grounded in the proper method of holding the reins and in changing them from one hand to both and vice versa; also shortening and lengthening at all paces. To make men handy in this respect, they should have constant practice; some of this should be given when they have drawn swords or sticks in their hand.

8. The importance of keeping the reins supple and unpolished should be impressed on all recruits.

9. *To shorten or lengthen stirrups.*—To alter the right stirrup, first place all reins in the left hand. With the right hand take hold of the spare end of the stirrup leather, first finger close to the buckle, disengage the tongue and guide into the required hole, then pull the buckle up close to the D from which it is suspended, and replace the end of the leather. To alter the left stirrup, reverse the above instructions.

39. Physical training, mounted and dummy horse exercises

1. Physical training practices will be carried out as laid down for the dummy horse.

In addition exercises contained in the Manual of Physical Training may be carried out at the discretion of instructors.

During the early stages they should be done at the halt, and subsequently on the move. Throughout the period of mounted training some of these exercises should be performed

daily, the time occupied by them being reduced gradually down to a few minutes only towards the end of the course. The exercises will teach the recruit to use his thighs and knees to maintain himself in the saddle and to retain his balance.

The instructor should be careful to explain the objects of the various exercises and point out their effects on the various muscles and limbs. He should emphasize the fact that, in order to apply the aids correctly and quickly, the horseman must have absolute control of all his limbs independently, which the practice of these exercises will assist in developing. He must realize that the following exercises are only intended as a guide and must use his initiative to introduce variations.

Before a recruit is allowed to mount a horse, his riding muscles should, if possible, have been strengthened on the dummy horse. At the same time he should be taught the correct seat, and particular attention must be paid from the very first lesson, to getting the pupil "split up", *i.e.*, the seat placed down in the lowest part of the saddle so that he is sitting in it, and not perched on the cantle, a very common fault with riders who have either taught themselves or had an indifferent instructor during their elementary instruction.

2. The following exercises are recommended :—

Dummy horse exercises

i. *With the horse at rest :—*

- (a) Rising in the saddle from the knee with stirrups. (This exercise is useless if done from the stirrups alone.)
- (b) Rising in the saddle without stirrups. (Only when the pupil is fitter.)
- (c) Touching the foot with the hand on each side, with and without stirrups, the knees being kept firm on the saddle.
- (d) Leaning forwards and backwards in the saddle with and without stirrups, the knees being kept firm on the saddle.
- (e) Swinging the lower part of the leg to the rear, the knee being kept firm on the saddle. This exercise teaches the recruit how to use the lower part of the leg.
- (f) Relaxing and then tightening the thigh and knee grip.
- (g) Turning round in the saddle to either side to look behind without changing the position of the legs, one hand resting on the horse's neck and the other on the rear arch of the saddle.

The recruit is thus taught from the first that the knee should be immovable. The greatest care should be taken to avoid over-fatigue. It is useless, and indeed harmful, to exercise tired muscles.

ii. *With the horse rocking* :—

- (a) Balance and jumping exercises without reins, the pulley being detached and the horse rocked from behind. The rider, with arms folded, keeps his balance by the sway of his body.
- (b) For developing the riding muscles, the pulley being detached. The rider, with arms folded, rocks the horse by the sway of his body.
- (c) Balance and jumping exercises with reins, the pulley and weight being attached.

The rider should be properly placed in the saddle, holding the reins at the correct length, with the horse slightly "reined in".

The horse is then rocked from behind.

On the horse dipping to the rear, the rider keeps his balance by leaning forward from the waist.

On the horse dipping to the front, the balance is kept by slightly straightening the body so as to maintain it in a vertical position, and the rider gives the horse his head by stretching out his arms to the front from the shoulders.

Exercises (a) and (c), with the horse rocked very slightly, illustrate the position at a canter; with the horse rocked nearly to its full extent, the position over a jump.

3. The instructor, in the above exercises, should pay particular attention to the pupil's position, great care being taken that he is correctly placed in the saddle :—

- i. The balance to be maintained by swinging the body from the hips upwards.
- ii. The body from the hips downwards to be immovable.
- iii. The grip to be with the knee and thigh and not with the back of the calf of the leg.

The object of each of the above exercises should be thoroughly explained to the pupil.

4. During training on the dummy horse the pupil should also be taught how to hold the reins (Sec. 38), and should be shown the correct length of stirrups, according to the conformation of his leg, and also the correct method of altering his stirrups. It should be carefully explained that it is not necessary to remove the feet from the stirrups either to shorten or lengthen them.

Second Stage

40. General considerations

1. In so far as is possible, a recruit should receive his earliest instruction on a dummy horse, or a very quiet horse, so as to give him confidence from the beginning.

2. The objects to be attained are to give him :—

- i. Balance, and instruction and practice in using his thigh and knee to maintain himself in the saddle.
- ii. A correct seat.
- iii. Instruction in holding the reins and using his hands.
- iv. Instruction in using his reins and legs to apply the aids.

3. In the early stages of riding, to give the recruit confidence, both reins and stirrups should always be allowed. The stirrups may be strapped together under the horse's belly for the first few lessons. This should not be done for long, however, as it tends to cause an improper grip of the knees, obtained by forcing the feet outwards instead of by gripping inwards with the muscles of the fork. If snaffle bridles are not available, the reins should be attached to the cheek rings of the bit and the men should be allowed to hold on to the saddle when in difficulties. Alternatively they should be provided with a neck strap.

4. When trotting is begun it is advisable to teach the recruit the bumping trot first, both with the stirrup under the ball of the foot and under the instep. Some lessons in rising in the stirrups may also be given at the same time. It must be impressed on the recruit that no effort is needed and that he must allow himself to be thrown up by the movement of the horse.

Trotting without stirrups is a useful exercise for teaching balance and for stretching and strengthening the recruit's riding muscles, but it should be used with the greatest discretion and only practised for very short periods.

5. It must be impressed on the recruit that riding is largely a matter of balance, the grip of the legs being as a rule light, and only tightened to steady himself in an emergency.

The grip should be that of the knee and thigh, the lower part of the leg hanging down naturally, but kept steady. The body must give to the movements of the horse, with the loins and joints supple.

41. The seat

1. It must be thoroughly explained to the recruit that riding is a combination of "balance" and "grip." With

this end in view it is of vital importance that the pupil should be placed correctly in the saddle and the functions of the various parts of his body thoroughly explained.

He should be instructed to relax all the muscles of his legs, to sit down in the lowest part of his saddle and at the same time to sit evenly on his seat. This having been accomplished, the placing of the leg follows.

2. *Grip*.—To secure the maximum benefit of "grip", the instructor should place the pupil's leg in the saddle with his knees at the height best suited to his build and, in placing the leg, should draw the large muscle at the back of the leg to the rear, so placing the flat portion of the thigh against the saddle, from which position the maximum power is gained. If placed in the above manner, the weight of the body is on the seat, and the importance of its being so placed should be impressed on the pupil from the beginning.

The leg from the knee downwards should hang slightly behind the perpendicular. The inside portion automatically comes in contact with the flap of the saddle; this contact can be developed into grip, care being taken that only the inside portion of the calf is used for this purpose. If the back of the calf is allowed to be used, this will at once take the thigh and knee away from the saddle, and will minimize instead of accentuate the grip.

In explaining the use of the lower part of the leg for gripping purposes, it should be pointed out that it has other functions to perform, and the pupil must, from the beginning, be instructed to have the lower part of the leg perfectly free to be applied as required.

3. After having placed the leg itself, it merely remains to place the foot correctly. The pupil should be instructed to keep the toes raised and heels pressed down at all times. This is extremely important in order to attain the maximum benefit from the riding muscles, which are braced tight by the fact of the toe being raised, the tension being entirely relaxed directly the toes are allowed to droop.

The toes should point naturally. If the leg is properly placed, it will usually be found that they turn slightly outwards. Care should be taken that the beginner does not try to turn his toes inwards from the ankle, which merely has the effect of putting him in a constrained position from which no benefit is derived.

4. Care should be taken to fit the stirrups to the length suitable to the build of the rider. A man with a short thick leg requires his stirrups shorter in proportion than does a man of equal height with a flat thigh and thin leg.

The following will be found a good general rule for fitting stirrups. First allow the man to sit loosely in his saddle and let his legs hang freely down, then let him squeeze the saddle lightly with his knees and raise his toes, and then adjust the stirrups so that the bars are in line with the soles of his boots. The stirrups are intended to be an aid and convenience to the rider ; if they are too long, he will lose his seat by leaning forward in his endeavour to retain them ; if they are too short, the seat becomes cramped and the rider is prevented from using the lower part of the leg correctly.

5. In riding at attention the feet should normally be pressed home in the stirrups ; in ceremonial the stirrups should be on the ball of the foot (except at the gallop) ; at all other times it should be left to the discretion of the rider ; both positions should, therefore, be practised.

In either position care should be taken that the feet are well pressed down against the bars of the stirrups.

6. A good position depends on good balance, a firm seat and complete suppleness of the whole body.

42. The hands

1. The value of good hands must now be impressed on the recruit.

To have good " hands " on a horse is to possess the faculty of " give and take " which causes him to go comfortably whatever his temperament. This faculty appears to come naturally to some men, but to most it is difficult to teach and requires constant thought and practice on their part.

The principal factors which go to produce good hands are i a firm seat, ii suppleness of fingers, arms and shoulders, iii quickness to *anticipate the horse's intentions* and to give to him *at the right moment*.

2. There are times when the whole arm from the shoulder must yield to the horse's mouth, other times when he should be humoured almost entirely from the fingers or wrist. The hands should be pointed across the body, not held straight to the front in a stiff attitude, for the whole essence of sympathetic handling is that the wrist must be supple enough to act as a spring, alternately applying and relaxing the pressure on the horse's mouth.

The hands must be independent of all movements of the body ; this is impossible without good balance and a firm seat, which will enable the rider to have perfect control of himself in all circumstances.

3. The hands act by means of the reins and the bit on the horse's mouth. The pressure which they exert on the reins must be light but firm, steady without stiffness, and an elastic contact must always be maintained with the horse's mouth. It can be either light or strong according to the mouth or the work required. On a young horse the contact is a steady even feeling; on one with a light mouth it should be of the very lightest.

4. The hands either act, resist or yield. They act when they increase the tension on the reins, *e.g.*, when halting. They resist when they remain firm or still, *e.g.*, when collecting a horse at the halt. They yield when they follow the movements of the head and neck, *e.g.*, when jumping. The hands govern the position of the forehand, as indicated, acting on the mouth, neck and shoulders; indirectly they also act on the quarters by placing the shoulders in such a position that the hind quarters are obliged to change their direction.

43. The action of the reins

1. The reins act through the mouth on the horse's head, neck and shoulders, and thus affect his movements and balance. The results which they produce depend on their position and the degree and the direction of the tension exerted on them.

The rein or leg opposite to that which is acting should be used to regulate the effect of the acting rein or leg according to the type of turn required. Lateral control of the horse by means of the rider's leg and reins will be taught during the bending lessons (Sec. 49).

2. For practical horsemanship the action of the reins may be directed as follows :—

The direct rein.—When tension to the right (not towards the rider's body) is exerted on the right rein, the horse's head will be turned to the right. On an increase of the tension the neck and shoulders will follow the head and, if the horse is stationary at the time, he will turn to the right on his centre. When the left leg is applied as the rein is felt, the movement of the hind quarters will be prevented and the horse will turn on his haunches.

If the horse is in motion at the time of application of the rein and the rider maintains an equal pressure with both legs, the horse will turn to the right, the hind-feet following in the track of the fore-feet.

44. The aids explained

1. When a recruit has acquired balance and a proper seat, he should be taught how to use the *aids* to direct and control his horse.

From the beginning he should be taught that he must be able to make all movements of the reins, body and legs independently of each other, so as to combine them in any way required at the moment.

2. The inestimable value of "hands" must be impressed on him. The hands must be absolutely independent of all movements of the body. The feeling exerted on the reins should be light and firm, steady without stiffness; an elastic contact without force should be maintained by them on the horse's mouth.

This is impossible without the good balance and firm seat which will enable the rider to have perfect control of himself in all circumstances.

3. The aids are :—

- i. *Natural*.—The hands, body, voice and legs.
- ii. *Artificial*.—Whips, spurs, martingales, dumb jockeys, nosebands and other appliances used by trainers.

The recruit will be taught the use of the natural aids which are required to control the ordinary properly trained horse.

4.—i. *The hands*, by means of the reins, control the horse's forehead, *i.e.*, his head, neck and shoulders. They guide him, check him or assist to increase his pace. They alter the horse's balance by moving the head and neck up or down or to one side. They achieve their object by acting, resisting or yielding. (See Secs. 43 and 52.)

ii. *The body* is placed between the fore and hind legs and, by moving it backwards or forwards, the weight on the forehead or hind quarters is lessened or increased. By leaning it to one side, the weight is increased on that side of the horse.

iii. *The legs*.—The pressure of the legs should be applied behind the girth, and at the same time the knee must be kept close to the saddle. The chief use of the legs is to put the horse in motion, but they also guide the hind quarters or keep them in place. When the pressure is applied with one leg only, say the right, it has the effect of passing the hind quarters to the left or of preventing the horse from inclining his quarters to the right.

iv. *The voice* is of great assistance in controlling a horse. Talking quietly has a soothing effect and shouting a frightening effect on him.

The recruit should be taught to use his voice, a particular tone and word being used to denote that a certain movement is required.

v. *The whip and spurs* are a reserve force which the rider has at his disposal. They should be used only when the horse does not obey the pressure of the leg, or as a means of punishment.

5. It is of the utmost importance to use the aids in harmony with one another. The hands, legs and body should co-operate smoothly towards the end to be attained, *e.g.*, if the legs act to put the horse in motion, the hands must yield to allow him to move forward.

In training a recruit or remount the action of the hands and legs should be quite distinct and separate at first. As training progresses, the interval between the two should be diminished until it is almost imperceptible.

6. Before demanding any movement of a horse, the rider must so poise him or place him physically in such a position that it is easy for him to carry out correctly the desired movement, *e.g.*, when a turn to the right is being made, the body should be inclined slightly back and to the right. This lightens the forehand, assisting it to be brought round, and at the same time follows the natural tendency of the horse, which is to turn to the side towards which the centre of gravity is moved.

45. Simple aids for turns and circles at all paces

When the recruit can walk, trot and canter in straight lines, turns and circles may be introduced. In turning and circling he must be taught to lean his body slightly in the direction in which the horse is moving and slightly back.

2. When the recruit is thoroughly confident and can perform all the above exercises correctly, he may be taught to ride without reins and with a loose rein. These exercises, if carried out on quiet and reliable horses, are useful in teaching the recruit that the seat of a good horseman is at all times independent of his reins (Sec. 56).

3. *Walk or trot.*—Close both legs to the horse and ease both reins slightly. As soon as the horse advances at the desired pace, relax the pressure of the legs and feel the reins as required.

4. *Halt.*—Close both legs and then feel both reins, at the same time bringing the weight of the body slightly back. As soon as the horse halts, relax the pressure of the legs and the feeling of the reins.

5. *Turns*.—All turns should be made on the haunches.

Right turn.—Collect the horse and lead the forehand round with the right rein supported by the left against the neck. Close the left leg, if necessary, to prevent the haunches flying out. Lean the body back and slightly to the right. The off-hind leg is the pivot of the turn.

Left turn.—Reverse the above.

46. Elementary jumping (Stage I)

1. The recruit should be brought on gradually and giving him falls should be avoided. The instructor should aim at making his pupils like jumping from the beginning, realizing at the time that jumping will be looked on at first as a dangerous and difficult exercise.

Jumping, when carried out with discretion, is an excellent training for men and horses. Constant practice throughout the recruit's training will enable the man to acquire, and afterwards to maintain, a firm seat.

2. Riding over a bar laid on the ground makes a good beginning, the men trotting round the school with suitable distances between files and jumping the bar in turn. This has the advantage of impressing on both men and horses that they are doing nothing out of the common, and results in an orderly and quiet procedure.

In the first jumping lessons the recruit should hold his reins loosely in one hand and be allowed to take hold of the neck strap with the other. As he gains confidence, he should be encouraged to let go of the neck strap and fold his arms across his chest, dropping the reins altogether.

The arms should be folded as follows:—The right hand grasping the left elbow, the left hand grasping the right arm above the right elbow.

As the seat improves, this may be varied by making the recruit place his hands on his thighs, elbows lightly touching the hips, and, later still, place his arms in more difficult positions, to make the movement of the upper part of the body independent of the seat. In jumping recruits should keep their stirrups until the instructor considers it advisable that they should discard them.

3. In approaching the fence, the body should be upright (normal); as the horse takes off, the pupil should be instructed to lean slightly forward and to tighten his grip; as he lands, the body should resume the normal position. The movements of the body from the hips upwards when landing over a jump vary so much with different horses and different fences that

it is impossible to lay down any hard-and-fast rule, but as a general rule the body should regain the normal position as the horse lands. It is a matter of the rider balancing his body assisted by grip. The horse should be eased up gently after a jump; on no account should his pace be suddenly checked.

When the initial stage is passed, frequent change of horses accelerates progress.

The rider must not point the toes down or cling with the heels. Any signs of stiffness or undue muscular contraction must be checked at once.

4. A guide to the stages for instruction in jumping will be found in Appendix I.

5. Jumping low obstacles is very little exertion to the horse, and the more the recruit has of it, the sooner he will be ready to enter the third period of instruction. Before he enters this stage, he should be able to sit his horse with ease, both with and without reins and, when jumping, to keep a light feeling on the horse's mouth without in any way interfering with it.

Recruits who show signs of nervousness or over-anxiety, or who have unduly weak seats, must be treated carefully from the start, being given more practice in balance motions and other exercises according to requirements.

Third Stage

47. Directions for instructors

1. The recruit should now be taught to change the diagonal when rising at the trot. This is done by bumping in the saddle once and rising again.

Men should be made to change the diagonal periodically, when on the march or in the field, as this eases both the horse and rider and with a little practice there will be no difference in comfort between the two diagonals.

2. Great attention should be paid to the upper part of the body, which should be held straight without stiffness. The head must be held erect without undue contraction of the muscles of the neck. To guard against this contraction, turning the head when mounted should be frequently practised.

48. More advanced aids

1. *To collect the horse.*—In collecting the horse the rider causes him to stand, walk, trot or canter at attention. He makes the horse bring his hind quarters under him by a

pressure of both legs, and causes him to flex his jaw and bring his head slightly in by an equal feeling of the reins. The pressure of the legs should precede almost imperceptably the feeling of the reins. This assists in obtaining the necessary high carriage of the head.

2. *Rein back.*—Collect the horse and then feel his mouth as an indication to step backwards. When the horse has taken the required number of steps backwards, the rider must relax the feeling of the reins, retaining the pressure of the legs to keep the horse collected. As soon as the horse has halted, the pressure of the legs must be relaxed. The rider must never have a continuous pull on the horse's mouth and should lean the body slightly forward. The trained horse should rein back in a collected manner, with his head carried fairly high. He should move in a straight line and must not be allowed to get behind his bit or to run back, but should make each movement in obedience to the rider's indication. He must not be allowed to halt in an uncollected position.

3. *To canter, off fore and off hind leading.*—Collect the horse, turn his head slightly to the left with the left rein, lean the body slightly back and to the left and cause him to strike off into a canter with a pressure of both legs, the left leg the stronger, thus using lateral aids. When the horse has struck off, change the bend to the direction in which he is moving. The horse must always canter united. As the horse becomes more advanced in his training, it will not be necessary to turn the head to the left. The trained horse should be able to bend, lead and turn simultaneously in the same direction.

For the good horseman on a well trained horse diagonal aids should be used, that is, a slightly stronger right rein and left leg. Diagonal aids ensure that the horse strikes off straight without any displacement of the quarters.

4. *To canter, near fore and near hind leading.*—Reverse the above aids.

49. The bending lesson

1. The bending lesson includes the "pass" and the "half pass". The lesson teaches the recruit to apply the aids lightly but firmly, and emphasizes the importance of harmony between the legs and hands. The bending lesson should be done at a collected pace.

2. In all lateral movements the forehand must slightly precede the hindquarters and the horse should never be allowed to step backwards.

3. The bend should be made from just behind the poll, the neck being kept straight from the withers to the top joint of the neck. The horse should always be bent in the direction in which he is moving and his jaw should be relaxed. When the horse is correctly bent, the rider, sitting square in the saddle, should be able to see the cheek and eye of the horse on the side towards which he is moving (Plate XXI).

4. The following are the movements made:—“*Right shoulder in*”, “*Left shoulder out*”, “*Left shoulder in*” and “*Right shoulder out*”, to move round the school.

“*Right pass*” and “*Left pass*”, to move straight across the school.

“*Right half pass*” and “*Left half pass*”, to move diagonally across the school.

5. “*Right shoulder in*”.—This is done when the horse is on the right rein. Collect the horse, lead the forehand towards the centre of the school with the right rein, supported by the left, the left leg closed against the horse's side until his body is at an angle of 45 degrees with the wall, hind feet one yard clear of the track round the school. Then change the bend of the horse to the left with the left rein, supporting his forehand with the right rein, and, by an increased pressure of the rider's right leg, cause him to move in a direction parallel to the side of the school, placing the off leg in front of the near leg. The rider's left leg exerts pressure sufficient to keep the horse up to his bit.

On reaching the corner of the school, the horse will be made to go forward and turn in the usual manner, being brought to the shoulder in again after the corner is passed.

To halt, feel both reins and close the left leg.

“*Left shoulder in*”.—Reverse the above.

6. “*Left shoulder out*”.—This is done from the “*right shoulder in*”. Turn the horse a complete turn to the left as described in para. 7 below, so that his body is at an angle of 45 degrees with the wall of the school, head facing towards the wall. Then bend the horse to the right with the right rein, supporting his forehand with the left rein, and, by an increased pressure of the rider's left leg, cause him to move in a direction parallel to the side of the school, placing the near leg in front of the off leg.

On reaching the corner of the school, turn the horse on the haunches.

“*Right shoulder out*”.—Reverse the above.

7. The turn from “*right shoulder in*” to “*left shoulder out*”.

PLATE XXI.



RIGHT HALF PASS.

Circle the forehand round with the left rein and the hind-quarters with the left leg, the right rein and leg being used to support. The horse should turn on his centre.

Care must be taken that this turn is not made on the forehand by sufficient pressure of the right leg being applied.

8. "*Right half pass*".—This is done when the horse is going round the school on the right rein. Bend the horse to the right with the right rein, supporting his forehand with the left rein, and, by an increased pressure of the rider's left leg, cause him to move in a direction diagonally across the school, placing the near leg in front of the off leg (Plate XXI).

The horse's body should be straight and on a line pointing up and down the school, movement being made diagonally across the school on a line making an angle of 45 degrees with the side of the school.

On reaching the side of the school, the horse will be made to "*go large*" on the left rein without further word of command by applying the aids for ordinary forward movement.

"*Left half pass*".—Reverse the above.

9. "*Right pass*".—This is done when the horse is going round the school on the right rein. The right rein bends and leads, the left supports, the rider's left leg causes the horse to place the near leg across the off leg, the rider's right leg supports and keeps the horse up to his bit. Movement is made directly across the school in a direction at right angles to the wall. On reaching the side of the school, the horse will be made to "*go large*" on the left rein without further word of command by applying the aids for ordinary forward movement.

The horse's body should be straight and inclined in the direction in which he is moving only just enough to allow the near leg to be carried in front of and across the off leg. The horse must be kept well up to the bit and no tendency to move backwards must be allowed.

"*Left pass*".—Reverse the above.

50. Jumping with reins (Stage II)

1. When the pupil has gained a fairly firm seat without reins, he should be gradually trained to handle the reins when jumping, and the greatest care must be exercised to avoid ill-treatment of the horse's mouth during the process. If the rider gives his shoulders, arms and wrists free play when the horse requires more rein, all jerky movements will be avoided as the hands go forward. The reins must be held sufficiently long and the man taught to keep his hands low and allow them to come freely forward as the horse is on the downward plane.

2. The pupil should then be given horses which require *riding* at their fences and be taught to handle them with resolution. A combination of the qualities of patience and determination are invaluable in a horseman and should be developed and encouraged at this stage of the training.

Fourth Stage

51. Change at the canter

1. *To change off fore and off hind to near fore and near hind leading.*—Turn the horse's head slightly to the right and cause him to change by a stronger pressure of the right leg, preventing any undue deviation of the hind quarters with the left leg, thus using lateral aids. The rider's body should be inclined slightly back and to the right.

These movements should be made gently and, as soon as the horse has changed the leading legs, he should be bent in the new direction.

Exaggerated movements of the rider's body or jerking the horse's head from one side to the other must not be allowed. As the horse becomes more advanced in his training, it will not be necessary to bend his head to the right. The trained horse should be able to bend, change, lead and turn simultaneously in the same direction.

For the good horseman on a well trained horse diagonal aids should be used, that is, a slightly stronger left rein and right leg. Diagonal aids ensure that the change of legs is made smoothly and without any deviation of the quarters from the straight line.

2. The correct instant for the change at the canter is when the off fore has come to the ground. The rider should note the rhythm of the canter by marking the beat of the off fore. In the perfect change the fore and hind legs will change simultaneously. In training a young horse, the rider should concentrate his attention on the change of the hind legs (which is the most difficult part to the horse). The action of the rider's leg and the position of the body is vitally important to ensure this change behind. It is also very important that collection should be maintained at the moment when the change is asked for.

3. *To change from near fore and near hind leading to off fore and off hind.*—Reverse the above aids.

52. Indirect rein (reins in one hand)

When the right rein is carried over the horse's neck to the left without increased backward tension, the horse's nose will

be turned to the right, but the action of the rein pressing against the right side of the neck will cause the weight to be thrown on the left shoulder.

If the horse is stationary at the time, he will turn to the left on his centre. An increased pressure of the right leg will cause him to turn on his haunches.

If the horse is in movement and both legs maintain an equal pressure, the hind feet will follow the track of the fore feet.

It is by means of the "indirect rein" that a horse is turned when all four reins are held in one hand.

53. Leading horses

1. In riding one horse and leading another, the led horse should usually be on the near side, so that, by keeping on the left of the road, the ridden horse will be placed between the led horse and the traffic. The led horse's rein should be held in the left hand lying flat against the reins of the ride horse.

If the led horse is fresh, his rein should be held short in the left hand, about a foot from his head, the ride horse's reins being held in the right hand. If the led horse tries to break away, he must be given in to at first, being gradually brought under control; otherwise he will either pull the rein out of the leader's hand or else pull him off his horse. Leading horses on the off side should also be practised.

2. When two horses are being led, one should usually be on each side of the rider.

3. When three horses are being led, one should be on the near side and two on the off side. When two horses are being led on the same side, the reins of the outer horse should be passed between the jaw and the back strap of the head collar of the inner horse before being gathered up.

4. If the led horse is saddled, the stirrups should be prevented from swinging about by being slid up that part of the leathers which is next to the saddle. They may be further secured by passing the lower end of the leathers downwards and inwards through the stirrups.

54. Instruction in the gallop

1. Recruits should be taught how to ride horses at the gallop.
2. There are two alternative positions which may be adopted :—

- i. For a horse which requires a certain amount of driving the rider should sit well down in the saddle, gripping with his thighs and knees and using the lower part of his legs as required.

In order to keep control of his horse, he should maintain a light feeling on the horse's mouth, keeping his hands low and his fingers closed on the reins.

- ii. For a horse which moves freely forward at the gallop the rider should adopt a more forward position.

For this he should take the weight of his body off his seat bones and lean the upper part of his body forward, the weight being taken by the knees, thighs and stirrups; the reins must be shortened in order to keep continuous touch with the horse's mouth.

3. Recruits in the later stages of their training should be given constant practice in galloping at a uniform pace without allowing their horses to pull and should be taught to pull up quickly and quietly.

55. Riding awkward horses

1. Although the object of the training of a recruit is to teach him to ride a properly trained horse well, recruits should be given the opportunity of riding awkward horses before being finally dismissed.

Care must be taken, however, not to test their nerve too highly and to give individuals only such horses to ride as they may be reasonably expected to control. At the same time it must be realized that a man who has only just completed his training may have good but unconfirmed habits spoilt by being made to ride horses which do not respond properly to a correct application of the aids.

Such riders will not tend to improve bad horses, which should be ridden by accomplished horsemen if it is intended to eradicate their faults.

2. It should be impressed on the recruit that quiet and determined handling gives better results than roughness or punishment.

A horse, before he does anything wrong, usually gives a slight warning by momentarily letting go his bit so as to allow himself to adopt the position of body which he requires. The rider should be prepared to take advantage of this warning.

There is usually a cause (apart from real vice) for misbehaviour on the part of a horse. It may be due to faulty training, fear or a defect of conformation which makes it difficult for the horse to do what he is asked. A frequent source of trouble is bad hands on the part of the rider.

3. *Kicking and bucking.*—Keep the horse moving and so prevent him from contracting the muscles which he requires

to enable him to kick or buck. Sit slightly back without stiffening the body, keep the horse's head up and distract his attention by playing freely with the bit.

4. *Rearing*.—The first essential is to have the reins loose. The rider should lean well forward, assisting his balance by holding on to the horse's neck. A horse which is known to rear should be ridden with a tight standing martingale.

5. *Refusing to leave the ranks*.—If he cannot be ridden out, he may be led out or backed out by hand. In trying to ride the horse out, the ranks should be opened slightly and the rider should use his legs firmly and quietly and keep contact with his mouth. When the horse has left the ranks, the rider should make much of him and repeat the lesson at once. Sometimes turning a horse round quickly three or four times and then at once pressing him forward in the required direction may have the desired effect. Very bad cases must be retrained as described in Sec. 83.

6. *Refusers*.—A very frequent cause of refusing is nervousness on the part of the rider, who, by checking the horse just before the jump, causes him to stop short or swing round. Another common cause is jobbing the horse in the mouth while actually jumping or on landing, caused by the rider having a loose seat and keeping himself in the saddle by the reins.

Horses which continually refuse should be examined to make sure that refusal is not due to some physical ailment or defect.

The horse should be taken slowly and collectedly to within a few lengths of the fence and then put straight at it by the rider increasing his leg pressure. He must be kept well up to his bit. If the horse swerves round, he should be turned back the opposite way to face the fence again.

He should be rested from jumping for several days, be made to go well in to his bridle and taught to obey the leg. When jumped again, he should be taken over very small fences and the rider should dismount and make much of him immediately he has jumped.

The rider must note carefully how the horse refuses, whether he swings his quarters or turns his forehand, and use the aids suitable to the occasion.

A horse which continually refuses from temper or stubbornness should be taught afresh (Sec. 79).

7. *Rushing fences*.—A horse which rushes his fences is best cured by being made to jump fences of different heights placed close together in a jumping lane. He may then be ridden over small fences in the open also, placed close together

at varying heights and solid. The rider must never allow the horse to go at a faster pace than he requires. If the horse shows any signs of becoming excited, he should be halted and reined back collectedly.

A horse may also be circled round in front of a fence as though he were not going to jump it. When he settles down, he may be jumped over the obstacle.

8. *Pulling*.—A horse may pull owing to a sore mouth or from having been allowed to contract the bad habits of leaning on the hand or getting the head down. These habits may be corrected by frequently halting him, reining back and making him stand still.

To prevent the horse from leaning on the hand or pulling, a dead pull on the reins should be avoided, tension being alternately applied and relaxed; riding with a feeling on three reins only often has the desired effect. The grip of the knees should be tightened to increase the firmness of the seat and on no account should a pull be exerted by pushing the feet forward and leaning back.

A runaway should be treated in a similar manner. Bad cases must be restrained. (See Sec. 78.)

9. *Mounting a restive horse*.—With the left hand gather up the reins loosely and seize the cheek piece, holding the stirrup iron in the right hand. Place the left foot in the stirrup and transfer the right hand to the pommel, off-side waist or other part of the saddle. The rider should now be able to mount without difficulty. At the first opportunity such horses should be systematically trained to stand still (Sec. 84).

56. Miscellaneous exercises in the riding school

1. The following exercises and games may be found useful in assisting the progress of the recruit, and also in keeping trained men up to standard. Others which suggest themselves to the instructor may be introduced, but they should always have some definite object in view and should be looked on as merely a means to an end.

2. In order to teach a man to have a strong seat, with the knee firmly in the saddle, and at the same time to keep his feet pressed down home in the stirrups with the leathers practically taut, he should frequently be practised in standing up in his stirrups. At first this should be done with the horse standing still, the man resting his hand on the horse's neck, if necessary to assist his balance; afterwards at the walk, trot and canter.

During the very early stages a folded blanket may be

strapped over the saddle to make the seat less hard for the recruit.

3. When executing circles in the school, men should often be made to bump at the trot, with the stirrup on the ball of the foot, as this encourages the proper use of the legs.

4. *The circle*.—The ride being told off by sections, the command "Nos. 1 OF SECTIONS, CIRCLE RIGHT (or LEFT)" is given, on which each No. 1 will ride his horse in a circle and fall-in in the rear of his section; Nos. 2, 3 and 4 will do the same when ordered by the instructor.

"ODD (or EVEN) NUMBERS CIRCLE RIGHT (or LEFT)".—Each odd (or even) number will ride in a small circle and fall in behind the even (or odd) number immediately behind him.

"HEADS OR SECTIONS CIRCLE RIGHT (or LEFT)".—The leading man of each section will ride in a circle followed by

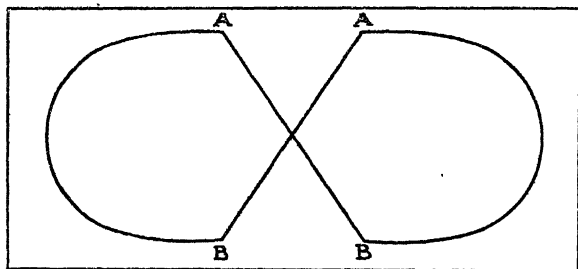


FIG. 18.

Nos. 2, 3, 4. They will continue in the circle until they get the command "Go LARGE", when they will cease circling and resume their original formation; or the rein may be changed by the word of command "HEADS OF SECTIONS—CHANGE".

5. *Figure of 8*.—For the preliminary training in this movement, which may be carried out either in the riding school or in the open, the horse should be cantered quietly on a larger circle or an oblong of about the same length as the school.

The change of rein and leading legs should be made exactly when required between the letters A and B (Fig. 18).

6. Striking off at a canter with a named leg leading, when moving at a walk or trot either in the open or in the school, is a good exercise for teaching recruits the use of their hands and legs in combination. The instructor gives the command "CANTER—OFF (OR NEAR) LEGS LEADING" and, after proceeding a few yards, "TROT" or "WALK". The exercise is

continued by alternating cantering and trotting or walking, the leading legs at the canter being constantly varied.

7. *The serpentine.*

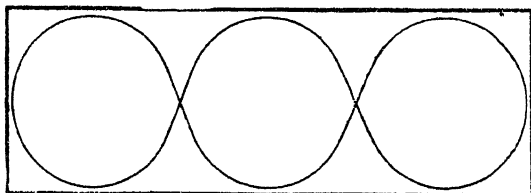


FIG. 19.

The changes of rein and leading legs to be made as soon as each new circle is begun in the centre of the school.

8. *Circling at the corners.*

The circles should be made first at a walk, and then at a trot, on both reins, before being made at a canter. At a canter no attempt should be made to make the horse do a small circle till he is fairly perfect at a big one. The circles should be gradually reduced in size until the horse makes such a small figure that he almost turns about on his haunches. The horse should be made to go right into the corner, and make

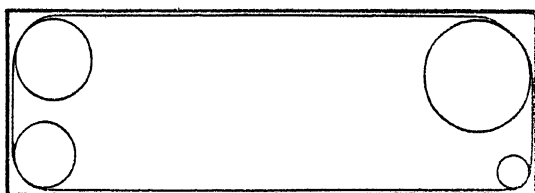


FIG. 20.

almost a square turn, but care must be taken to prevent him from making these turns on his forehand. This is a difficult figure and only a well-balanced horse can be expected to do it well.

9. *Ladies' chain.*—The leading file turns about and rides a slightly zig-zag course from front to rear through the remainder of the ride, who will be at eight or ten yards distance from each other, passing on their right and left hands alternately. When each man in succession has done this, the rear file, at

increased pace, will zig-zag through the ride from the rear and the remainder will follow in succession.

10. *Games on horseback*.—Progress depends so much on the interest taken by the men that games on horseback should be encouraged. Among the games which can be played are "*follow my leader*", "*throwing and catching ball*", "*wrestling on horseback*", "*jumping matches*", "*bending races*", "*plucking the handkerchief*", from the shoulder of one of their number or from the ground, "*potato races*", "*figures of 8 round posts or trees*", "*rounders*", "*dismounting*", "*mounting*" and "*changing horses on the move*", "*vaulting*", "*mounted football*" and many others, some of which can be combined with jumping.

11. *Riding in extended order*.—A good exercise, for advanced squads of men who can ride fairly well, is for three or four squads of eight men, led by their own instructors, to be grouped under an officer, who should work them together.

The officer can put them over jumps by squads and can work them in close or extended order. Suppose he is working them at three yards' interval, in a column of squads at ten yards' distance with No. 1 squad in front, then, by the word of command "*No. 1—RIGHT ABOUT TURN*", he can turn the squad in front about so that the men must ride their horses to meet the squads following and pass in between the files, or, by increasing the pace of the rear squad, he can make it overtake and ride through those in front. Such exercises can be varied to any extent.

This exercise is also very useful for training remounts. To make horses quiet, each squad may be halted in turn and ordered to dismount and mount while others ride through them at different paces.

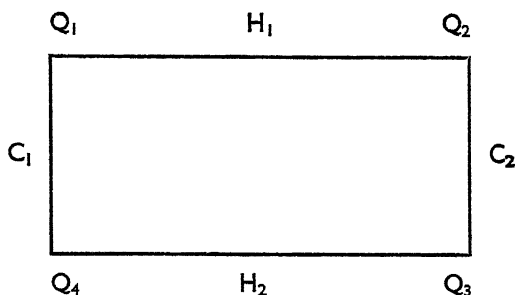
57. The ride

The following is an example of a simple, combined single and double ride, which can be carried out with recruits in the later stages of their training. The pace at which the various figures are made can be increased according to the progress made.

It must be distinctly understood that the object of the ride is to improve the riding of the men and the training of the horses. It is a guide and example only and must not be considered as a set piece or item of drill to be performed with exactitude. The order of the words of command may be altered and figures omitted or introduced at will.

The number of men should not exceed 12, but may be less than that number.

For 12 men the manege should not be smaller than 60 yards by 30 yards, as follows :—



Words of command (1)	Instructions (2)
1. " <i>From the front. Number.</i> " " <i>Numbers 1 to 6. No. 1 Ride.</i> " " <i>Numbers 7 to 12. No. 2 Ride.</i> "	Walk and trot the ride round the manege on both reins for the purpose of inspection, and number.
2. " <i>No. 1 Ride. Right Turn.</i> " " <i>No. 2 Ride. Right Turn.</i> "	These orders should be given as the leading file of each ride arrives at the second quarter marker. On arriving at the opposite side, the rides turn to the right without any further word of command. The instructor must be careful to turn each ride at the same place, which will cause rides to fit in, at the opposite side, without having to increase or decrease their pace.
3. " <i>No. 2 Ride. Circle Right. Away.</i> " " <i>No. 1 Ride. Circle Right. Away.</i> "	Each man makes his horse describe a semi-circle on to the centre, goes down the centre until the instructor gives the order " <i>Away</i> ", when he describes another half-circle back to the side. On going to the centre and coming back to the side, the dressing is kept by the flank to which the semi-circle is made. When on the centre, all horses should be covered off and at the correct distance.
4. " <i>No. 2 Ride. Circle and Change.</i> " " <i>No. 1 Ride. Circle and Change.</i> " Repeat above, substituting " <i>Left</i> " for " <i>Right</i> ."	The same as above, except that, before arriving at the side, each man changes the bend of his horse and leads round on the other rein.
5. " <i>Whole Ride. Right Turn.</i> "	As soon as the whole ride is on one side of the school, turn it to the right, dressing to the right.

Words of command (1)	Instructions (2)
6. "Halt."	This order should be given before the ride arrives at the opposite side of the school.
7. "Rein back. March." ...	Rein back four paces at a time.
8. "Forward."	On the command "Forward," the horses must go freely forward until they arrive at the opposite side.
9. "Halt."	
10. "On the haunches. Right Turn. March." ...	When the ride is sufficiently advanced, substitute "On the haunches, About —March."
11. "On the haunches. Right Turn. March." ...	
12. "Walk March." ...	Until the whole ride arrives at the opposite side of the school.
13. "Halt."	
14. "On the haunches. Left Turn. March." ...	
15. "On the haunches. Left Turn. March." ...	
16. "Walk March." ...	On arrival at the side of the school, go large on the right rein.

DOUBLE RIDE

Serial (1)	Words of command (2)	Instructions (3)
17	"Single file down the centre."	At C2, the leading file turns down the centre followed by the rear files.
	"Odd numbers to the right, even numbers to the left, form a double ride."	On arriving at the other end of the school, the leading file makes a square turn to the right, the second to the left, and so on.
18	"Rear files close to 4-ft. distance."	Each rear file closes in to 4-ft. distance.
	The ride on the right rein is responsible for pace; the ride on the left rein is responsible for dressing.	The ride on the left rein dresses half a horse's length behind the corresponding numbers in the other ride. In the event of rides not containing the same number of files, the odd man in the rear of the ride will not be marked by a number in the other ride even though the rides have been turned round and he is in the lead. The object of this exercise is to teach the man to ride his horse in a straight line and, on arriving at the end of the school, to make his horse go away from the other horses. When passing at the ends of the school or doing turns across the school, rides will always pass right hand to right hand.

DOUBLE RIDE—continued

Serial (1)	Words of command (2)	Instructions (3)
19	<i>"By half sections down the centre."</i>	On arriving at C2, each odd number forms a half section with his corresponding even number. The distances should still be maintained at a half horse's length and the intervals at one horse's length, the ride on the left rein being a half horse's length behind the ride on the right rein.
20	<i>"Odd numbers to the right, even numbers to the left."</i>	This order should be given before the leading half section arrives at C1 double ride markers, where each man will make a square turn to the right or left, as the case may be. On reaching C2, the men will pass right hand to right hand.
21	<i>"Rides inwards turn."</i>	When the leading files of rides are just past Q2 and Q3 markers, each ride will turn straight across the centre, passing right hand to right hand. Rides will continue on the same rein.
22	<i>"Rides inwards turn."</i>	As in 21. This brings the rides back to their original numbering.
23	<i>"Rides inwards turn—and change."</i>	The rides will turn as before. On reaching the centre, each file will dress by the opposite flank and change the rein on reaching the opposite side of the school. The turns can now be repeated to exercise riders and horses equally on both reins. (The ride on the right rein is responsible for pace; the ride on the left rein is responsible for dressing.)
24	<i>"Rides inwards turn—and change."</i>	As in 23. This brings the rides back to their original numbering.
25	<i>"By half sections down the centre."</i>	As in 19. Each file checks his dressing.
26	<i>"Rides outwards turn."</i>	Each ride turns outwards and, on reaching the side, continues round the school on the same rein.
27	<i>"By half sections down the centre."</i>	As in 25.
28	<i>"Rides outwards turn."</i>	As in 26. To bring the rides back to their original numbering.
29	<i>"Rides inwards circle."</i>	When the leading files of rides arrive at Q2 and Q3 markers, each file will describe a half circle and cover off his respective double ride marker down the centre.
30	<i>"Rides away."</i>	When the rides are covered off down the centre, each file will describe a half circle back to the track, thus completing a circle.

DOUBLE RIDE—continued

Serial (1)	Words of command (2)	Instructions. (3)
31	<i>"Rides half figure of eight."</i>	When the leading files of rides arrive at Q2 and Q3 markers, each file will describe a half circle to the centre covering off his double ride marker, even numbers being dressed a half horse's length in front of their corresponding odd numbers.
32	<i>"Rides away."</i>	Each file will describe a larger half circle back to the opposite track, thus changing the rein. Rides will pass right hand to right hand when coming away from the centre.
33	<i>"Rides inwards circle."</i>	As in 29.
34	<i>"Rides away."</i>	As in 30.
35	<i>"Rides half figure of eight."</i>	As in 31. To bring the rides back to their original numbering.
36	<i>"Rides away."</i>	As in 32.
37	<i>"By half sections down the centre."</i>	As in 19.
38	<i>"Rides outwards circle."</i>	When each ride is covered off down the centre, each file will circle from the centre to the track.
39	<i>"Rides away."</i>	Each ride will circle back to the centre, going away on its respective rein on reaching C1 double ride markers.
40	<i>"Rear files hold back to one horse's length."</i>	When the rides are going round the side of the school.
41	<i>"Leading files inwards incline."</i>	On arriving at Q2 and Q3 markers, the leading files of rides will incline across the school to the opposite Q1 and Q4 markers. The even numbers pass through the intervals behind the odd numbers. This changes the rein.
42	<i>"Leading files inwards incline."</i>	On arriving at Q2 and Q3 markers, the leading files of rides will incline across the school to the opposite Q1 and Q4 markers. The odd numbers pass through the intervals behind the even numbers. This brings the rides back to their original reins.
43	<i>"Leading files of rides at the quarter markers counter change of hand."</i>	On reaching Q2 and Q3 markers (odd numbers Q3, even numbers Q2), each leading file will half passage towards H1 and H2 markers, respectively, and, on reaching the centre, will advance one horse's length. Leading files then half passage outwards to Q1 and Q4 markers, respectively. The rein is not changed.
44	<i>"Rides halt."</i>	When the leading files are just beyond Q2 and Q3 markers.

DOUBLE RIDE—*continued*

Serial (1)	Words of command (2)	Instructions (3)
45	" <i>Rides inwards pass—March.</i> "	Each ride will passage inwards to the centre, cover off the double ride markers and halt.
46	" <i>Rides outwards pass—March.</i> "	Each ride will passage outwards to the track and halt.
47	" <i>Walk march.</i> "	When the rides are covered off in the track.
48	" <i>By half sections down the centre.</i> "	As in 19.
49	" <i>Odd numbers to the right, even numbers to the left.</i> "	As in 20.
50	" <i>Rides halt.</i> "	When the leading files have arrived at Q2 and Q3 markers.
51	" <i>On the haunches, inwards turn—March.</i> "	Each file will complete a right-angled turn from the side of the school.
52	" <i>On the haunches, outwards turn—March.</i> "	Each file will turn back to his original direction.
53	" <i>Rides forward.</i> "	Rides continue round the school on their respective reins.
54	" <i>By half sections down the centre.</i> "	When the leading files arrive at the C2 double ride markers.
55	" <i>Leading half sections to the right, second to the left, and so on.</i> "	On arriving at the end of the school, the leading half section will wheel to the right, the second to the left, and the remainder to the right and left alternately.
56	" <i>By sections down the centre.</i> "	On arriving at C2 double ride markers, the leading half sections will wheel to the right and left, respectively, and form sections. The remaining half sections will follow and cover in the same manner.
57	" <i>Head right wheel.</i> "	The ride is now going round the school in column of sections.
58	" <i>Squad to the right.</i> "	This order must be given just before the leading section reaches the end quarter marker.
59	" <i>Halt.</i> "	On the line C1—C2.
60	" <i>Prepare to dismount—Dismount.</i> "	

TRAINING OF THE REMOUNT

58. General principles

1. A trained charger or riding horse must be :—

- i. Well balanced and capable of carrying a heavy weight over long distances, without loss of condition.
- ii. Handy and quick in obeying the correct aids.

- iii. Steady both in and out of the ranks.
- iv. Capable of being ridden with one hand at any pace either in the company of other horses or alone, and trained to the use of weapons.
- v. Active on his legs and a good jumper over all kinds of obstacles.
- vi. Unafraid of entering deep water or swimming.
- vii. Stand still when being mounted.
- viii. Willing to be led.

2. No hard-and-fast rule can be made as to how long it should take to train a young horse. Peculiarities of breed, temperament, climate, age and condition will cause variation, and horses with weak points in their conformation will take longer to train than well-shaped horses.

The same general principles of training are, however, applicable to all horses.

3. The training of a horse which joins a unit under five years old should take at least 12 months, should be carried out systematically and should be divided into three stages of about equal length.

However tractable a horse may be, his training should on no account be hurried and he should not be ridden on manoeuvres till he has completed his sixth year, and one complete year's training.

The first stage is that of handling. The object of this stage is to prepare the horse's character and muscular development so that he will be fit, both in mind and body, to respond to the demands which will be made on him in the second stage.

The second and third stages are those of training. The object of these stages is to acquire complete control of the horse's mental and physical powers and to accustom him gradually to the use of weapons.

4. The following syllabus may be taken as a rough guide. A lesson should last from one hour to one hour and a half, and a week's work is taken as averaging six lessons. The syllabus should not be adhered to rigidly and the peculiarities of each individual horse must be taken into consideration in deciding how much time should be spent on each item of training :—

i. 1st stage, about 17 weeks.

First fortnight ... Leading the horse about and getting him accustomed to strange sights and sounds.

<i>Second fortnight</i> ...	Trot round on the longe or long reins. during this period the horse should begin to learn obedience to the voice.
<i>Third fortnight</i> ...	(a) Trot on the longe or long reins for longer periods; (b) lead over very small jumps; (c) saddle.
<i>Fourth fortnight</i> ...	Longe or long reins and begin to back remount.
<i>Fifth fortnight</i> ...	Work at walk and trot on straight lines.
<i>Seven weeks</i> ...	Work at walk and trot on straight lines, increase and decrease of pace, leaving and passing through ranks, mounting and dismounting, free jumping and free forward movements.

ii. **2nd stage, about 17 weeks.**

- (a) Turns and circles.
- (b) Cantering on straight lines or large circles, allowing the horse to strike off on whichever leg he pleases, the object at this stage being only to obtain free action.
- (c) Lateral movements.
- (d) Turning on haunches.
- (e) Cantering on named leg.
- (f) Rein back.
- (g) Mounted jumping.
- (h) Slow gallop.

iii. **3rd stage, about 17 weeks.**

- (a) Lateral movements at trot and canter.
- (b) Sword and lance work.
- (c) Perfection and repetition.
- (d) Figure of 8 and other school exercises at all paces.
- (e) Gallop.
- (f) Cross-country work.

Note.—Horses should be bitted during this stage at the discretion of the instructor.

5. The trainer must have a real knowledge of the horse so as to know exactly what muscles he is seeking to develop and how much work his pupil is capable of standing.

6. He must be patient, for horse training entails constant repetition, results show themselves slowly and only imperfect results can be achieved by hurrying.

He must have his temper at all times under control, even when punishing a wayward or stubborn horse.

7. He should be moderate and reasonable in his demands, asking little but asking often. He should never try to attain more in a lesson than a horse's temper, condition or standard of training is capable of standing.

8. He must be attentive and sympathetic so as to anticipate opposition or evasion immediately and to reward and encourage the least sign of obedience.

At the same time he must be firm and determined to accomplish any exercise that he has made up his mind to perform. He must be bold and take risks, and win, without undue roughness, any struggle that he may have with his pupil, but he must be tactful to devise means by which he may accomplish his end without force.

9. The trainer must never forget that he is asking his pupil to perform many movements which are unnatural and at times almost painful; he should therefore allow periods of complete relaxation between exercises, so as to avoid the risk of unnecessary evasions due to fatigue and pain on the horse's part.

10. Although a horse has little reasoning power, he has a retentive memory, which should be made use of in his education by freely employing a method of suggestion. A horse will remember a kind word or a caress after an exercise correctly performed, but, at the same time, it must be realized that he will remember punishment, the reason for which he may not understand, owing to the limitations of his intelligence or standard of training.

11. The trainer should employ the system of reward and correction. Reward may take the form of relaxation of the rein and a pat on the neck, of dismounting or of giving something to eat. The horse should be rewarded directly he has obeyed. Correction may be given by increased pressure of the rein, a touch of the spur, halting and reining back, but the trainer must be sure that the horse understands what is asked of him before he resorts to punishment.

12. Great care must be taken that a horse has been properly prepared for a new lesson by adequately assimilating previous ones and by having been brought to a suitable stage of physical fitness.

Early lessons must be simple and the length of all lessons must be largely governed by the physical condition and conformation of the horse.

13. Before starting a movement, it is important to place the horse in such a position as will make it as easy as possible for him to perform it.

14. No lesson should be undertaken while a horse is over-fresh, frightened or excited. Until he has been calmed down, it will be impossible to make him concentrate attention on his work.

15. When "long reins" are used as an alternative to longeing, they should be attached to the cavesson and not to the snaffle. In the hands of an expert they may sometimes be used attached to the snaffle in retraining awkward and bad-tempered horses.

16. When a remount is passed into the ranks, he should be quiet and handy and as active as his build will allow. He should be thoroughly well developed physically.

Training should not, however, cease with dismissal, but should be continued throughout his career.

17. During all stages of a horse's training riding with a loose rein should be practised in each lesson (Sec. 59). It has the effect of quietening the horse and teaching him to balance himself when mounted without assistance and to go freely forward without pulling.

18. The action of the reins and the use of the aids have been dealt with in Secs. 43 to 45. These must be employed in the same manner as that laid down for recruits, so that the horse may be trained for the recruit and the recruit for the horse on exactly the same lines.

19. A guide to riding-school exercises in training the young horse will be found in Appendix II.

59. Loose rein riding

1. Every lesson, from the very beginning, should include a certain proportion of loose rein riding.

2. The practice of riding with a long loose rein is an essential part of a remount's training. It teaches the young horse to move forward freely without attempting to pull and to balance himself and his rider's weight without assistance, and is a good preparation for the final stage of his training when he is ridden with only one hand.

It also has a steadying effect on badly broken or pulling horses by showing them that they have nothing to fear from the bit.

3. It should be started at a slow walk in a ride in the school and eventually be done at the trot and canter independently in the open.

4. The reins should be allowed to slide gradually through the fingers until they are quite loose and the horse's head is

perfectly free. If the horse attempts to increase his pace, he should be checked by a slight upward shake of the rein and by the voice, care being taken always to use the same tone of voice. In riding with four reins in one hand, the disengaged hand may be lightly dropped on the reins in front of the other hand. If the horse is very unsteady, he should be halted and then allowed to go quietly forward, the rider again easing the reins.

5. At first the horse should be allowed to carry his head as he likes so long as he does not pull. When the horse has learnt to go at all paces and to turn with a loose rein, he may be taught to carry his head at the proper height by raising the hand and giving it a combined forward and upward movement.

6. Riders should sit easily in their saddles, retaining a light grip with the knee and thigh, the lower part of the leg being kept away from the horse.

First stage

60. General considerations

1. The first stage of the remount's training is of the greatest importance, for in it his character is formed and on it will depend largely the ultimate success of his training.

The trainer must aim at gaining the confidence of the horse, which he can do by kindness, patience and a study of the individual horse's disposition.

2. The objects to be attained are to develop the horse's physical powers and make him quiet to ride, move freely forward and find his balance under the new conditions.

3. The period of time which may be expected to elapse before an unbacked horse can be ridden will vary with circumstances, but should usually be from one to two months from the time when the horse is first handled.

61. Leading

1. To begin with, a well-fitting head collar, or preferably a cavesson, should be put on, to which a long rope is attached, and for a few days the trainer should lead the horse about on either side. He should frequently stop and make much of him and speak to him, giving him a mouthful of grass or oats to gain his confidence and make him accustomed to his trainer's voice and touch.

2. First lessons should be given in a quiet place where the horse will not be frightened or have his attention distracted.

Should the horse take fright at any object, he should not be forced up to it, but the trainer should gradually restrain him and bring him back to his original place.

3. When the horse will lead kindly to either hand, a snaffle, without reins should be placed in his mouth, to remain in for not more than an hour daily. The snaffle should be very carefully fitted and care taken to discourage any tendency in the horse to get his tongue over the bit. (See Sec. 78, 3.) His mouth should be examined daily to see that it has not been injured. When the horse's mouth has become accustomed to the snaffle, the latter should be put on for an hour a day in the stable, when he should be allowed to feed with it on. This will be found specially useful in preventing the development of a tendency to get the tongue over the bit.

62. Longeing and long-reining on the cavesson— General considerations

1. In order to strengthen his muscles, bring him on in condition and teach him obedience, especially to the voice, the horse should now begin work either on the longe or long reins, and this work should be continued for from six to eight weeks until he is fit to be mounted. The question of whether use is made of longeing or long-reining depends on the means and number of trained men available.

2. Longeing has the advantage over long-reining that it is simpler and requires less supervision to produce fairly good results when inexperienced men are the only available remount trainers.

3. On the other hand, by using a pair of long reins attached to the cavesson, a very much higher standard of training can be reached before the horse is backed than by longeing. Reining back, lateral movements, turns, circles and preliminary jumping can all be taught, and the horse's quarters are more under control. But long-reining, although more interesting, is not so easy as longeing for inexperienced men and requires more supervision. Unless one experienced man is available to assist and supervise the work on every six remounts or less, it will usually be found best for this period to work on the longe in preference to long reins. If the long reins are attached to the snaffle, there is a great danger with inexperienced men of spoiling the horse's mouth and head-carriage, but there is no fear of this if they are attached to the cavesson only, by which means excellent results can be obtained.

4. Whether the horse is worked on the longe or on long

reins, boots or bandages must always be worn on the fore legs, and, if possible, on the hind legs as well, to prevent damage by brushing and knocks.

5. It is essential that the trainer should teach the horse absolute obedience to the voice during this period of his training. The horse cannot be considered fit to be backed until he will increase his pace readily from halt to walk, walk to trot, trot to canter, and vice versa, on the word of command.

6. The vital importance of these early stages of longeing cannot be overestimated. This is the stage when the trainer makes his first impressions on the horse, gains his confidence, forms his character and sows the seeds of impulsion.

63. Methods of longeing and long-reining

1. Longeing.—

- i. The longeing rein or rope, about 25 feet long, should be attached to the "D" of the head collar or ring of the cavesson. For the first few lessons an assistant will lead the horse in a circle of about 15 feet radius, the trainer holding the longeing rein, conforming to the horse's movements in a small circle.

- ii. In longeing to the left, the rein should be coiled in the left hand, which should be held away from the body with the fingers, hands, wrists and arm supple.

A steady pull should be avoided and the trainer should endeavour to maintain an elastic contact exactly the same as when riding. Should the remount play up or attempt to break away, the fingers should close firmly on the rein, which should be held close to the body.

The right hand holds the rein in front of the body when necessary, the back of the hand uppermost. A whip should be carried in the right hand, point down to the rear. The whip should not be used, but should be shown to the horse if he refuses to move forward.

If it is found that the head collar is pulled over the eye, the rein may be attached to the lower ring of the jowl-piece of the head collar.

- iii. Care must be taken that the horse's head is bent from just behind the poll to the direction in which he is moving and that his hind feet follow the track of his fore feet.

In order to achieve this, as soon as the horse is accustomed to the longe and will move obediently without the assistant, the trainer should decrease his own movement until he stands in the centre of a circle of about 20 feet radius, round which the horse moves. The trainer's left foot (when working to the left) will be at the centre of the circle, the right foot working round the left and the right shoulder pointing just behind the horse's near shoulder.

- iv. The horse must be longed equally to either hand, not more than five minutes being given in either direction before changing.

2. Stages of longeing.—

- i. *First stage*, lasting from six to nine lessons. During this stage the trainer should have an assistant. It is the duty of the assistant to ensure that the remount obeys the commands of the trainer. He should not speak; the trainer alone should give the orders. The assistant's duties are to reward with feed from his nosebag, and to stop or control the movement in accordance with the orders of the trainer.

No hard-and-fast rule can be laid down with regard to the position of the assistant. With a horse which turns in he should be on the inside, and with one which turns out on the outside. In the first stage the assistant will hold on to the head collar all the time.

Notes.—1. *Voice.*—The words of command should be limited to "walk", "trot" and "halt". They should be spoken differently; "walk" being spoken quietly and drawn out; "trot" rather more sharply, rolling the TR; and "halt" crisply and sharply.

2. *Position of trainer.*—On the longe the trainer should keep his shoulder behind that of the horse. If he is too far forward, he cannot drive the horse and, if too far back, the horse may swing round.

3. On no account should the horse be allowed to break loose; if there is the slightest indication on the part of the horse of trying to break loose, the trainer should adopt a sitting position at once.

4. The importance of rewarding immediately cannot be overestimated.

5. The hind legs must follow in the track of the fore legs. The head should be bent slightly inwards from the poll with the rest of the body straight.

6. As far as possible the ground on which longeing is carried out should be varied from day to day.

- ii. *Second stage*, lasting from six to nine lessons. As in the first stage, the assistant walks round with the horse. As soon as the horse has quietened down, the trainer will tell the assistant to drop his hands but to continue walking alongside the horse.

The assistant must be ready to ensure obedience to the commands of the trainer as required, and to reward.

Note.—During this stage the trainer should decrease his own movements and increase the length of the rein.

- iii. *Third stage*, lasting from 12 to 18 lessons. In this stage the trainer teaches the horse to work on the longe without the aid of the assistant. As this is the first time that the horse has been asked to work on his own at any distance from the trainer, it is a very great advance and must be approached very carefully and progressively, and should only be attempted when absolute obedience has been obtained in the first and second stages.

The best method is to employ two assistants as in the following diagram :—

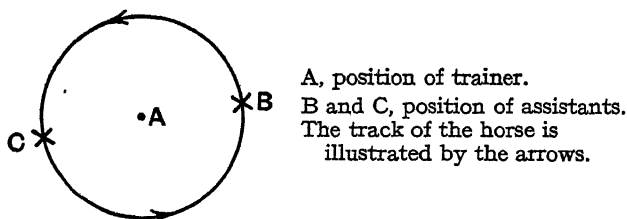


FIG. 21.

The trainer begins by asking the horse to move on his own from B to C; the assistants at B and C are ready to ensure obedience.

In the later stages, when the assistants have been moved further away, the horse may set off at a

gallop. Should this occur, the trainer should remain quiet, allowing the horse to continue. After a few minutes, when the horse has settled down and is anxious to stop, the trainer should assert himself and make him go round once or twice more, then call his assistant and bring the horse back to the walk and finally halt.

This is an occasion when the trainer must not attempt to control the movements of the horse with his voice, as he is unlikely to obey and obedience cannot be enforced. In consequence the horse learns to disobey.

Notes.—1. The assistant should only be used for the purpose of reward or to check disobedience.

2. The movements of the trainer should now be reduced to a minimum.

3. The position of the assistant should be constantly varied.

4. Towards the end of this stage the horse should be taught to halt anywhere on the circle and not only just opposite the assistant.

3. Long-reining.—

- i. *First stage*, lasting from four to seven days. During this stage the trainer should have an assistant. The horse is led to the riding school or some enclosed place, such as a circular manege or a ring of hurdles. Work is carried on as in longeing, *see* para. 1, i and ii, above, and, as soon as it can be managed, a driving pad is put on.

As soon as the horse will move round freely to either hand and will carry the pad quietly, the second stage can be begun.

- ii. *Second stage*, lasting from seven to ten days. Both reins are now attached to the cavesson and the outward rein is passed through the ring of the pad and allowed to ride on the horse's back. The training is then carried on as in the first stage, to either hand, gradually preparing the horse for the feeling of the reins round the quarters in the third stage.
- iii. *Third stage*, lasting from two to three weeks. This stage begins by getting the outside rein round the horse's quarters for the first time, the inside rein remaining direct to the hand. The trainer at the halt places the off rein over the croup, leaving a certain amount of slack from the croup to the horse's

head, but taking care not to allow it to fall over the tail. He then gets the horse on the move and allows the outside rein to slip quietly down on to the hocks, taking care to have no tension on it. The more quietly this is done, the sooner the confidence of the horse is gained. If the outside rein is held too tightly, it is apt to rise up under the tail and the horse clamps it: if this happens, the rein must be played out and allowed to drop on to the hocks. The outward rein is now taking the place of the leg in controlling the horse's quarters.

The horse is kept at this stage, being worked equally on a circle to either hand, until he learns absolute obedience to the voice.

- iv. *Fourth stage*, lasting from two to three weeks. In this stage the inside rein is passed through the ring of the pad, so that both reins are now through the rings. The trainer places himself to the side and well to the rear of the horse and a more correct feeling of the reins on the cavesson is obtained.

The horse can now be changed from one rein to the other without stopping to alter the gear, and reining back and lateral movements can be begun.

(a) *Changing*.—Changing should first be done from the halt, later on the move. Use should be made of the side of the mane to assist in getting the horse back on his hocks when making the turn about at the change. It will soon be found that very little rein will be needed and that the horse can be made to change almost entirely by the use of the voice. It is essential that the supporting rein should be used in the change to prevent the horse being bent too far inwards.

(b) *Reining back*.—The trainer should stand directly behind the horse, and should feel the rein on the side on which the forefoot is advanced. If necessary, the assistant should stand in front of the horse and encourage him to step back by placing his hand on his nose and pushing, and also by tapping the advanced leg with a cane. In reining back a horse should move one diagonal at a time and, in teaching him, no more than two or three paces should be enforced before moving forward again. He should be kept from running back by the voice or whip, if necessary. In reining back the trainer's hands should be held low: this ensures greater control over the quarters and helps to keep him straight.

(c) *Lateral movements*.—In this exercise very gradual progress should be the aim from the beginning. The horse must not be placed too squarely at first. He must always be

placed in position before any movement is asked for, and, to help to keep him in position, he should be worked with his head against the wall of the manege.

The assistant's help may be necessary in the first few lessons: if it is, he will work as the trainer does in the dismounted bending lesson. (*See* Sec. 67.)

In passing to the right the trainer will place himself to the right and will lead the horse away with a lively feeling of the right rein, while the left rein pressed lightly against the quarters makes him move laterally to the right. The hands should be kept fairly low and the whip used to keep the horse up to his bit.

In passing to the left the aids are reversed. The horse should always be bent in the direction to which he is moving.

Lateral movements are very tiring, and only one or two paces at a time should be carried out at first, the number being gradually increased.

When the horse is well advanced in the fourth stage, he should be worked in the open for a part of each lesson, and backing him should be begun.

Towards the end of this stage the driving pad should be replaced by the saddle, the stirrups being fastened together and used instead of the rings of the pad.

64. Mounting

1. When the horse goes smoothly at all paces with the saddle and snaffle on and is absolutely obedient to the voice, he should be mounted.

This should be done in an enclosed place at the end of a lesson. An assistant should stand at the horse's head with the longeing rein attached to the D of the head collar, and make much of the horse. A second assistant should stand on the off side of the horse, holding the snaffle rein in his right hand and the off stirrup in his left. A third assistant, on the near side, should hold the snaffle rein in his left hand and help the rider, whose leg must be bent, to mount.

2. Mounting should be done in three definite stages:—

First.—The trainer pressing with his hands on the horse's back or standing on a stone or mounting block and leaning across it to accustom the horse to feel pressure.

Second.—The trainer lying across the saddle, the near side assistant having given him a "leg up" to accustom the horse to a weight on his back.

Third.—When the trainer is lying as in stage two, the near side assistant should place the trainer's foot in the stirrup,

on which he should swing his right leg over the horse and lower himself gently into the saddle. The off side assistant will place the trainer's right foot in the stirrup. The horse should not be led forward until he is quiet to mount and dismount.

The aim throughout should be absolute control of the horse and avoidance of accidents.

3. The horse should be led forward by an assistant with a longeing rein and later should be led round on a circle. A stirrup leather must be put round the horse's neck to assist the rider and to obviate his hanging on by the reins.

4. When dismounting for the first few times, the rider should remove his left foot from the stirrup, after having swung his right leg over, and slide gently to the ground.

5. Both in mounting and dismounting great care must be taken not to touch the horse with the left toe.

6. When horses are difficult or nervous on being mounted, blinkers should be used. This invariably has a quietening effect on such horses.

65. First riding lessons

1. The first lesson should be devoted to riding the horse about at a free walk and trot on straight lines and teaching him to stand still, especially in mounting and dismounting on both sides.

2. The basis of training is free forward movement. In the early stages there should be two assistants, one by the horse's head to reward him when he obeys the voice association, one behind him to correct him when he declines to move freely forward. The trainer should make no attempt to raise the horse's head, as this will tend to shorten his stride and will militate against his free forward movement. Nor should the trainer use his legs on the horse, or the latter will be liable to become dead to the leg. As the horse learns to move freely forward with a man on his back, the voice association may gradually be replaced by that of leg pressure, the latter being gradually increased as the former is decreased.

3. When the horse walks well with impulsion from the hindquarters, improved head carriage may be demanded for short periods as a preparation for balance.

In an untrained horse the centre of gravity is further forward and the head carried lower than in the case of a properly balanced horse. Raising the head and getting his hindquarters and hocks further under him causes the centre of gravity to move backwards. Care must be taken that the

undeveloped muscles of the neck and loins are not overtaxed by making the horse carry his head high for too long periods.

The head should be raised very gradually by considerable leg pressure combined with a tactful feeling of the horse's mouth.

4. The horse may now be practised in making a few turns and halting.

The turns should be correctly made without loss of impulsion or deviation of the hindquarters.

In halting care must be taken that there is no sudden jerk. The legs must be firmly closed and the bit felt firmly and steadily, the action of the hand partaking more of mere resistance to the mouth than exerting active pressure against it.

Second Stage

66. Teaching more complicated aids

1. The object of this period is to make the remount obedient to the more complicated aids.

It may be begun when the horse carries his head and neck well, will walk and trot obediently and turn correctly, both on the move and at the halt.

2. He should be given periods of walking and trotting with correct head carriage, being taught to move freely with light and fairly high action. Circling to either hand must be practised, care being taken that the bend is correct, that the quarters follow in the track of the forehand and that impulsion from behind is maintained continuously.

3. The bending lesson (Sec. 67) and reining back should be taught.

Care must be taken that the horse reins back in response to the aids only and not out of hand, also that too high a head carriage is not demanded at first, which would overload the quarters.

4. When the horse responds freely to the leg, cantering may be taught. This should be begun from a slow trot on a circle. If the horse strikes off correctly, he should be allowed to stride on and be made much of. If he starts with the wrong leg leading, he must be quietly brought back to the trot and started again. Eventually the horse should strike off with the required leg on a straight course, and from the walk or halt.

Every endeavour must be made to make the horse start off quietly and smoothly with only a slight deviation of the

quarters and a light application of the aids. This can only be done by the exercise of patience. The horse must not be hurried.

5. Towards the end of this period turning about on the haunches should be constantly practised and a great deal of trotting, cantering and circling with a loose rein.

6. Before the horse is considered fit to begin the third stage, he should be able to walk, trot or canter with a loose or tight rein, and should be fairly collected at these paces. He should halt, rein back and do the bending lesson at the walk quietly and obediently. He should pass dummies without fuss, should be a good hack on the road alone or in company, and should be quiet in the ranks.

67. The bending lesson

1. The objects of the bending lesson are stated in Appendix I, Secs. X and XI. The bending lesson will be taught in two stages, first stage dismounted, second stage mounted.

2. *First stage.*—The trainer, standing on the horse's near side, holds the nose-band or cavesson with the left hand under the jawl, the reins remaining on the horse's neck. An assistant with a whip stands behind the horse ready to maintain impulsion. The trainer gives the order "walk march" and applies the butt end of the whip with his right hand intermittently just behind the girth. Directly the horse obeys the indications of the whip by crossing his legs and moving away, he should be led forward for a couple of paces, halted and made much of by the trainer. With fussy or difficult cases it is often advisable for the trainer to hold the reins and stand in the position of "in front of your horses" and to step sideways and forwards while the assistant applies the butt end of the whip behind the girth. When the horse moves freely away to the right, this lesson should be repeated on the other side.

3. *Second stage.*—The trainer will now mount and endeavour to obtain obedience to the leg. The assistant should be ready beside him to apply the butt end of the whip as described above, in case the horse will not obey the leg alone at first.

4. In both stages the trainer should endeavour to obtain the correct bend just behind the poll in the direction in which the horse is moving, the remainder of the neck and body remaining straight. This, however, should be demanded gradually, for at first the horse will be inclined to bend in the opposite direction.

Third stage

68. Collecting and advanced training

1. This stage will be devoted to teaching the "flexions" as an aid to "collection" (Sec. 69); "collecting" the horse; teaching him to perform the lateral movements at all paces; to change at the canter; to go quietly over the assault course; to gallop in company without pulling; and, in general, implicitly to obey the will of his rider. Towards the end of the period the horse may, with advantage, be ridden at squadron or regimental training for short spaces of time.

2. In the search for "collection" the trainer must always insist on vigorous impulsion from behind, the essence of good training being free forward movement. Horses continually attempt to evade this impulsion, but can never be up to their bits and under proper control unless they learn it.

3. Much of the work must be done independently, so that the trainer may be sure that the horse is responding to the aids and is not merely following others or obeying a routine and habits which he has learnt.

If any tendency to develop bad habits is detected, the horse must be put back to more elementary work after a thorough examination for any physical cause.

4. The change at the canter should be taught on a figure of 8, use being made of the half passage, and eventually on a straight line. This may be started by cantering the horse along the side of the school on the right rein, near legs leading, and changing the legs at the corner. The horse's head should be carried high and the pace be as slow and collected as possible. In the first lessons the horse should be just checked to a trot for one or two strides and then struck off on the required leg. In the cantering lesson, if one or two horses strike off on the wrong leg, the whole ride should not be pulled up, but the men on the horses which are wrong should be ordered to circle inwards.

5. A good deal of turning about on the haunches at the canter should be done to make the horse handy in combat. This should be done sharply but without excitement or pulling, any tendency to which must be corrected at once by halting and reining back.

6. Horses should be so balanced that they will start into a canter from a halt with a loose rein, and so collected that they will canter at the slowest pace and halt on the least indication.

7. The horse must be taught to gallop at a steady striding pace, taking hold of the bit enough to allow the rider to

control his balance but ready to reduce pace and alter his balance immediately.

8. He should be taught to stand the pressure of the ranks by working in section and troop at wide intervals, which should be gradually decreased. He must be accustomed to all military sights and sounds and must be taught to leave other horses at any pace and stand still in the sight of other horses.

9. A properly trained remount should fulfil the following qualifications :—

- i. Stand still for mounting and dismounting.
- ii. Lead well.
- iii. Be as well balanced as his make and shape will allow.
- iv. Be obedient to the correct aids.
- v. Be able to passage, rein back, halt and do a figure of 8 correctly and collectedly, and be capable of being ridden with one hand.
- vi. Turn about actively on his haunches.
- vii. Be a good jumper over all kinds of obstacles and a safe performer over all kinds of country.
- viii. Be steady on parade and be accustomed to traffic, gun-fire and unusual sights and sounds.
- ix. Go alone or in company at any pace required without pulling and pull up quickly and smoothly when required.
- x. Be trained to the use of weapons.
- xi. Leave the ranks quietly and without any fuss.

69. The flexions

1. There are two kinds of flexions, direct and lateral.

In the direct flexion the horse is made to give his lower jaw and bring his head slightly in, bending from just behind the poll.

In lateral flexion he turns his head sideways, bending from just behind the poll, and also gives his lower jaw. In both flexions the neck (except just behind the poll) and the body should be kept straight and the horse must be kept up to his bit while giving the flexion.

2. Unless a horse flexes properly, he cannot be collected.

3. Before the flexions are taught, the horse should have been taught to hold his head and neck properly and to move forward freely.

Some horses with defective conformation (thick throttle) can only flex the lower jaw when the head is carried fairly low.

4. *Direct flexion.*—To begin with, the trainer separates the reins as shown in Fig. 22. He maintains the head carriage with the cheek reins and at the same time obtains a slight giving of the lower jaw by a light intermittent feeling of the curb reins.

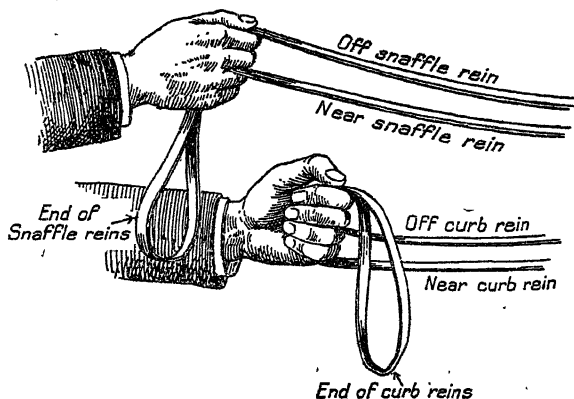


FIG. 22.

Directly the horse makes the least concession with his jaw, he should be made much of and allowed to go forward freely on a loose rein.

In some cases it will be a considerable time before the horse understands what is required of him, as the movement is not a natural one.

5. When the horse gives his jaw freely to the intermittent feeling of the curb reins, the rider should hold the reins as in Fig. 23.

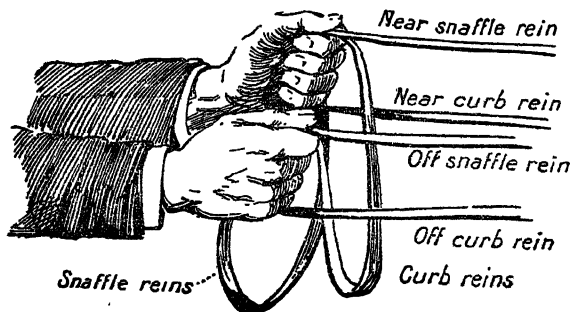


FIG. 23.

The feeling of the bit reins will now be steadier and the flexions demanded will be more definite.

Directly the horse gives his lower jaw, the trainer must give to the horse by relaxing the tension on the curb rein. This response must be very prompt.

6. *Lateral flexion*.—When the horse will perform direct flexion correctly, lateral flexion may be taught.

Instruction will be carried out on the same lines as for direct flexion, the horse being made to turn his head with the cheek rein and give his jaw with the curb rein while moving on a straight line. He should not turn until the rider carries his hands over and presses the indirect rein against his neck.

Teaching lateral flexions is the best method of curing a one-sided mouth.

70. Jumping

1. Jumping should be practised throughout the remount's training. Every effort should be made to cause the horse to like jumping by constant reward for good behaviour.

No horse which shows the least signs of soreness should be jumped and all remounts should be examined daily for splints or signs of lameness. Jumping a horse with tender feet or sore shins may cause him to become a consistent refuser.

2. The fences should be absolutely stiff so as to make the horse realize from the beginning that he cannot hit them without suffering for it. As many different varieties as possible should be employed, including a large proportion of ditches.

3. Lessons should be begun in a "lane". For a considerable time the fences should be kept very low, from one foot to two feet high, and the horses should be made to go freely down the lane, being led by their trainers on either side alternately. In doing this the horses should not be frightened or unduly hurried, but when they are accustomed to the lane and realise what is required of them, they should on no account be allowed to hesitate or stop.

It is desirable in a manege to school horses to either hand alternately, *e.g.* to the right one week and to the left the next week.

In a lane it is generally advisable to let an old horse give a lead to a young one and thus give confidence to the latter.

4. When first ridden over fences, the remount should for preference be ridden at a trot. This allows him to balance himself and jump off his hocks. He must not be pulled up

too soon after jumping a fence. The fences should be very low to begin with, as described in para. 3 above.

A neck strap should invariably be used at this stage to assist the rider to maintain his balance and obviate the risk of interfering with the horse's mouth.

5. During the first few lessons, after a horse has successfully jumped a fence, the rider should dismount and give him something to eat. A lasting effect on him will be produced by early and pleasing impressions of this type.

6. Once horses go freely over jumps, they should not be sent over one after another, but should be jumped singly.

7. If a horse is inclined to rush his fences or pitch on landing, he should be jumped over fences of different heights placed close together at varying distances.

8. Great attention should be paid to the "going" in jumping courses. Cinders and sawdust make the best going.

9. No horse, however promising, should be hurried in his training or made to go over jumps fast.

10. It may be advisable to longe some horses at first, but in this case precautions must be taken to prevent their mouths from being interfered with or the reins from getting entangled in the jump.

71. Use of long-rein driving in retraining awkward horses

1. A course of long-rein driving will often be found useful in retraining awkward horses.

It should be carried out by an expert in their use, the method of working being the same as that laid down in Sec. 63.

2. The horse's head-carriage in these cases should be specially studied.

If it is necessary to keep his head fairly high, an overhead check, attached to a snaffle, may be used. It may often be found useful in these cases to drive the horse with the reins attached to the snaffle instead of the cavesson. Two snaffles should then be used, to one of which the over-head check is attached; the second snaffle being preferably of the unjointed half-moon pattern.

If the horse persists in carrying his head high, a standing martingale fitted rather long and fastened to a broad noseband may be used, the over-head check being removed.

The trainer's object should be to induce the horse to carry his head correctly rather than to force it into the proper position.

3. The lessons should be short and frequent, from 15 to 20 minutes being sufficient at one time. Much cantering is inadvisable.

Throughout the work the trainer should look out carefully for any signs of chafes or other injuries, and at the first symptoms of these should cease work until the injury is cured or its cause removed.

TRAINING OF THE PACK ANIMAL

72. General considerations

1. A pack-horse should be neither a "slug" nor nervous. He should stand not more than 15 hands, of a thick-set, well-bred type, with short back, good loins and, above all, well-defined withers and well-sprung ribs.

2. Pack-horses and pack ride-horses should always be stabled together. Either should be capable of undertaking the duties of the other and duties should be interchanged frequently.

3. The ride-horse should be handy enough to be ridden with one hand.

The pack-horse should go boldly and freely alongside without either pulling or hanging back. He should be trained to maintain an interval from the ride-horse sufficient to prevent the rider's leg from being hurt by the pack.

4. The training should be divided into three stages :—

- i. Teaching the horses to go quietly without a load at all paces in forward movements and to halt easily.
- ii. Teaching the horses to turn and circle going close together without a load.
- iii. Teaching the horses to be handy and reliable at all paces over all kinds of country and teaching the pack-horse to carry a load and maintain an interval from the ride-horse.

73. First stage

1. Only a single rein should be used attached to a snaffle or the cheek of the regulation bit.

The off rein should be passed through the ring on the near side of the bit before being brought to the leader's hand.

2. The leader will hold all four reins of his own horse in his left hand and also those of the pack-horse, which will be held in the palm of the hand, the slack coming out between and being secured by, the first finger and thumb.

3. To prevent the pack-horse's hind-quarters from flying out, his head should be kept straight, or even slightly turned to the right, by means of a check rein.

The check rein should have one end attached to the headstall on the off side just above the buckle and the other end to a surcingle. A folded blanket should be placed on the horse's back to prevent the surcingle from shifting or galling him.

The check rein should be slackened when it is desired to jump the horse.

4. The trainer must be provided with a stiff light stick long enough to enable him to touch the pack-horse's off flank while sitting straight up in the saddle. He should use his voice freely.

Before beginning to make his horses move, the trainer must make them accustomed to the stick by at first placing it on the pack-horse's withers and gradually moving it towards the off flank, and finally placing it under his right arm.

Should the pack-horse attempt to pull away, the trainer should not pull against him but should follow him with the ride horse.

5. To begin the walk, trot or canter, the trainer will pass his stick over the pack-horse's withers and touch him on the off flank, at the same time using his voice and making the ride-horse move forward.

When both horses are in motion, the trainer may place the stick under his right arm and take the pack-horse's reins in his right hand. This will give him increased control over the horse, especially when halting.

6. When both horses will go forward freely at all paces, jumping may be begun. This should be practised over very small jumps in a lane on the lines laid down in Sec. 70. The trainer should begin by trotting up to the fences, keeping the pack-horse going freely beside him.

No attempt to heighten the fences should be made until both horses will go over them freely at the canter.

74. Second stage

1. This stage should be begun when the horses will move freely together in straight lines and will jump small fences easily.

It will consist of teaching both horses to circle and turn.

The check rein and stick will be required and the voice should be used freely as in the first stage.

2. In turning or circling to the left, the pace of the ride-horse must be slightly checked and the pack-horse must be

kept going by light intermittent touches of the stick on his flank.

In turning or circling to the right, the pack-horse must be checked and the ride-horse kept going freely.

75. Third stage

1. This stage should be devoted to teaching the pack-horse to keep at a distance from the ride-horse, and to moving over all kinds of country carrying the pack.

2. The long stick should be replaced by a short one, which may be carried in the left hand.

The reins of the pack-horse may be held in the trainer's right hand.

3. To teach the pack-horse to keep at a suitable distance, all movements should be started by the ride-horse at the full extent of the pack-horse's reins. The pack-horse should be kept at that distance by shaking the reins towards the right or by keeping the pack-horse off with the short stick.

4. During this stage loads must be carried and a great deal of jumping practised.

Loads must be increased in weight progressively, especially for jumping.

76. Training young mules

1. Young mules are naturally timid and easily startled, but they are, as a rule, docile and easily broken in, if treated with great kindness and patience. Rough treatment of any kind must be avoided as likely to prove fatal to successful training. Men must be carefully selected to break remount mules.

2. Saddling must be done at first with great caution, the saddle being placed gently on the mule's back and moved about freely so as to accustom him to the feel of it before putting on the girths. In girthing up care must be taken not to draw the girths so tight as to cause any uneasiness to the mule, who will then be walked about and allowed to get used to the saddle before the other harness is added. With the crupper especially great patience must be exercised, as it is likely at first to upset a timid animal.

3. A mule should be thoroughly accustomed to walking about with the saddle and harness before he is tried under a load. It is as well to start training a mule to carry loads by using two bags of sand or earth, weighing 80 lb. each, and, when he walks about with these quietly, the training can be

completed by substituting other loads. A young mule should always be allowed to become familiar with the sight of a load before this is tried on the saddle.

4. Mules should not carry a load on a steep hill until five years old and at first the load should be a light one and only carried for a short distance ; it should be gradually increased up to the full weight which the mule will be required to carry.

5. Finally, young mules must be trained to jump small ditches and similar obstacles without hesitation and, at the end of the training, this should be done with a load on. In leaping a mule, the rein must always be left loose and a whip should not be used.

RETRAINING AWKWARD AND BADLY TRAINED HORSES

77. General instructions

1. A horse properly trained in the first instance will only develop faults through subsequent bad riding or ill-treatment.

The results of bad handling are shown in defective carriage and paces ; in a nervous, sulky or irritable temperament ; or in a combination of the two.

The reason for any particular horse's awkwardness should always be looked for before any attempt is made to retrain him, as the method suitable for adoption will depend entirely on the causes of the faults displayed. For example, faulty conformation, improper biting, fear, bad temper, ignorance of what is required, poor condition, each require different treatment.

2. The work of retraining a spoilt horse is much more difficult than that of training a young and untrained one ; riders should therefore be specially selected for this.

3. The trainer should first make himself acquainted with the animal's special faults and then set to work systematically and patiently to eradicate them ; due regard must be paid to conformation, condition and temperament. It will, in some cases, be found best to treat the horse as untrained and begin his education afresh.

4. As the work will generally be of a corrective character, the horse's corn and exercise should be carefully regulated according to his amenability to discipline.

5. When the horse is put back into the ranks, he should, for a considerable time at least, be ridden by a good horseman, who should be told what his previous faults were and how they

should be coped with should they again be exhibited. Horses rarely forget bad habits and easily relapse into them.

78. The treatment of pullers and runaways

1. The usual causes of pulling are :—

- i. Excitability.
- ii. Pain.
- iii. Fear.
- iv. Freshness and want of work.
- v. Hard mouth.
- vi. Bad training.
- vii. Dry mouth.

The great object in curing a puller is to get him to go kindly with a loose rein. He must also be rebalanced and made to go collectedly, for, when he is allowed to get his head out of the angle of control or his neck out at full length and thus go on his forehand, he is able to pull hard. If a horse throws his head up and pulls in that position, a standing martingale, if properly applied, should assist in stopping him. Horses which pull from being over bent should be put through a period of training on a snaffle so as to raise the head.

2. *Excitability*.—Some horses, naturally of a nervous, highly strung disposition, become excited by unaccustomed sights and sounds, by the sight of galloping horses or by moving fast in the company of other horses. No special bit will cure this kind of puller; the only remedy is plenty of work, beginning at slow paces. Troop leaders and instructors of rides should ride these horses as much as possible to get them accustomed to seeing other horses working round them. Harness work sometimes improves them.

3. *Pain*.—A horse's mouth is most sensitive and many animals pull on account of the pain caused by the bit, or because their grinder teeth are long and sharp and cut the sides of their cheeks. Horses' mouths, especially those which have taken to pulling suddenly, should therefore be examined, particular attention being paid to the bars and the tongue. A neglected wound in the mouth of a young horse may spoil him for ever by making him pull or render his mouth one-sided through forcing him to hold the bit on one side to protect the injured part. If an injury of this nature is found, the horse should be given a rest, being exercised, if necessary, on a cavesson and, when the wound is healed, ridden for a time on a snaffle. If the grinders are long and sharp, the sharp points and edges should be rasped.

The corners of the lips also may be sore owing to the bit

being too narrow or through being chafed by the bit; the curb chain may also injure the chin groove, in which case the wound should first be healed and then a guard should be used.

If a horse gets his tongue over his bit, a piece of string passed through his mouth and tied to the front of the noseband may prove effective. If this fails, a figure of 8 mouth-piece or similar device should be used. In bad cases of horses getting their tongues back, the only sure method of preventing it is to tie the tongue up after the bit has been placed in the mouth; a piece of tape is tied to the tongue with a knot which will not slip, and the ends of the tape are then taken out from each side of the mouth and tied either above the muzzle or on to the front of the noseband.

4. *Fear*.—The only method of preventing pulling caused by fear is to accustom the horse to the cause of his alarm. He should be treated kindly and only ridden by careful, patient men.

The voice will often be of assistance in calming a horse which, in his early training, has been taught to obey it.

5. *Freshness*.—The remedy for a horse which pulls from this cause is to give him more slow, steady work and, if necessary, less corn.

6. *Hard mouth, bad training*.—These two causes of pulling are practically the same; no horse which has been properly broken ought to have such a hard mouth that he becomes unmanageable, although some horses will pull more than others however well they may have been trained.

All horses pulling from this cause will do so if a steady pressure is maintained on their mouths, however severe the bit may be. It is, therefore, essential to give plenty of slow, loose rein work, using the bit sharply as soon as they begin to pull. They should be constantly halted, reined back, circled and turned.

7. *Dry mouth*.—Some means of causing the flow of saliva may prevent this, *e.g.* a piece of flannel tied to the bit, a curb chain passed through the mouth, some grass, linseed or sugar, given at intervals, during training. Probably the best method is that described in para. 3, above, for horses getting their tongues back.

79. Faults in jumping—Refusing

1. Many different forms of fault are met with in jumping and in no part of a horse's training is it more important to ascertain the reason for the particular failing displayed.

2. i. A horse may refuse through :—

- (a) Fear caused by ill-treatment or, occasionally, natural want of heart.
- (b) Ignorance as to what is required of him.
- (c) Obstinacy.
- (d) Weakness.
- (e) Being sickened by too much jumping, especially on hard ground.
- (f) Want of nerve on the part of the rider.
- (g) Pain from bad biting, sore back, tender feet, etc.
- (h) Seeing other horses refuse.
- (i) Bad training originally.
- (j) Over-freshness or not having been jumped for some time.

The expression of the eye is often the best guide to the reason for refusal.

ii. Fear and ignorance must be cured by gentleness and patience. The horse should be led over any small obstacle, such as a tree-trunk or ditch which the man can jump on his feet in front of it.

Absolute quietness must be insisted on and no whip allowed.

If the fence is sufficiently small, the horse should be led or longed over if it he will not jump ; generally it will be found that he will jump mounted with a lead, but a free jumping horse should be put over in front of him. If this is ineffectual, the rail should be placed very low and gradually heightened again.

There is generally very little trouble with these horses if they are treated absolutely quietly in the first place and are not tried too highly at first.

As soon as they jump freely on the longe, they should be given a course of several weeks' jumping in the free lane. At first the jumps should be on the ground and the horses allowed to stop at and smell each. Gradually the jumps should be raised and the pace increased. Any horse stopping at a jump after the first three weeks should be sent down fast, with whips if necessary.

When the horses jump freely in the lane dismounted, they may be ridden on the cheek reins behind a good jumper.

iii. Obstinacy must be cured by perseverance and patience on the part of the trainer.

iv. A horse suffering from physical weakness or staleness should not be jumped until he has gained strength and recovered proper freshness and spirits.

v. In cases (f), (g) and (h) above the cause must be removed after which the horse should not be jumped for a time.

vi. If a horse refuses to one hand, he should be turned round to the opposite hand to which he has refused before being presented again at the fence.

80. Rushing fences

1. This is almost invariably due to bad breaking combined with an excitable temperament, and is brought about by giving young horses too long and too fast a run at their fences.

2. Horses which have acquired this habit should not be jumped in company with others until cured.

3. One of the best obstacles to school these horses over is an "in and out" fence, the "out" fence being stiffer and larger than the "in". They may also be jumped over a series of fences of different heights, placed close together but at varying distances apart. A grid sometimes proves effective. An excellent cure is jumping small fences at a walk.

4. Except when jumping a series of fences, these horses should not be given a straight run at a jump. They should be circled in front of it until they have quietened down, when they may be straightened just in front of the jump. It is often advisable to make such horses stand still in front of a fence, rein back a few paces collectedly and then jump quietly over the fence. This will also be found a useful method of dealing with refusers. Care must be taken to maintain collection when reining back so as to retain ready impulsion on moving forward.

5. A standing martingale on the nose band often has a steadying effect, especially with horses that get their heads up, and riders must be taught the value of the voice in these cases and of having one hand free to stroke the side of the neck.

81. Not taking off soon enough

1. To cure this fault is more a matter of good horsemanship than anything else. The horse must be shown where to take off by a sharp pressure of the rider's legs at the right moment and be given complete freedom of the head.

2. A guard rail about a foot high and placed at a distance in front of the fence to suit the height of the latter is an assistance in teaching.

3. A bar or small jump about seven yards in front of the obstacle usually has the effect of causing a horse to stand off well. It also teaches him to judge his distance two or three strides before the fence.

4. Schooling is best done in company with a free jumping horse.

82. Refusing to walk

1. This is a bad fault, as it not only tires out man and horse but is frequently the cause of rubs and saddle sores.

2. As a rule it is not a case which requires any special method of breaking, but is rather a matter of regulating work and food.

If a horse suddenly starts the habit, some local cause must be looked for, such as a sore mouth or back or too tight a curb chain or girth.

3. A horse not accustomed to a curb may develop this failing if the curb is used roughly. A little patience will cure this if it is remembered that the less the horse's mouth is interfered with, the better he will walk.

4. If the habit is due to cramped shoulder action, some loose rein riding will often have the desired effect.

83. Declining to leave the ranks

1. This is a natural tendency which may be met with in any horse and which becomes a vice through wrong treatment when first exhibited.

2. The commonest and most fatal mistakes made with these horses by bad horsemen is to make much of them when they refuse to leave the ranks and, when eventually they are got out, to flog them.

3. When a horse exhibits this fault, he should at once be handed over to a good horseman, who should be instructed to concentrate his attention on curing the fault.

4. Working the horse alone will not as a rule effect a cure. Work should be given amongst other horses as much as possible, but not in the form of drilling with them.

5. The first stage of the cure should be to make the horse stand still when other horses leave it. The second to rein back from other horses. The third to rein back, turn about and walk away. The fourth to stand still when other horses rein back from it and then to walk forward. The fifth to walk forward from other horses.

6. Start the above remedies with horses in extended order, gradually bringing them closer together day by day.

84. Declining to stand still when being mounted

1. As a rule these horses will yield to constant practice. They should be mounted and dismounted on both sides slowly time after time every day.

2. If the horse still refuses to stand, the following method may be tried.

Make a noose with a slip knot and put it over the horse's poll and under his upper lip. If he becomes restive give it a slight jerk and say "Steady". The horse will soon connect the sound of the voice with the discomfort caused by the twitch and will learn to remain still on the word "Steady" without the twitch. The twitch must never be used except in conjunction with the voice.

After doing this a few times, the trainer should dispense with the twitch when mounting the horse. With the left hand holding the reins and the cheek piece of the bridle, he should say the word "Steady" and swing himself into the saddle, not leaving go of the cheek piece until he is firmly seated. The horse connects the word "Steady" and the pressure of the hand on the cheek piece with the twitch and will, as a rule, stand just as steadily as he would with the twitch still on him.

3. A restive horse which has not been trained to stand steady will usually circle round on his forehand so as to edge away from the rider trying to mount.

The rider, when mounting on the near side, should pull the horse's head round to the right by tightening up the off bridoon rein and holding it tight in the left hand; vice versa if mounting from the off side. The horse cannot now circle on his forehand away from the rider, but, if he moves at all, must circle his hind-quarters towards him, thus permitting the rider to put his foot in the stirrup and mount with ease.

4. If the reins are let loose on the neck, restive horses will often allow their riders to mount.

85. General vice and bad temper

1. Such horses are most likely to be improved by a careful regulation of work and feeding, by being stabled by themselves and by firm and kind treatment both in the stable and outside.

2. To cure horses of really vicious habits, it will generally be necessary to resort to punishment, but punishment wrongly administered or bad temper will do much harm (*see* Sec. 86). For this reason only good horsemen with even tempers should be allowed to handle vicious horses whether in stables or outside.

86. Punishment

1. It should be very rarely necessary to fight a horse if a correct, systematic and progressive method of training has been employed.

2. If, however, after calm and due deliberation, the trainer decides that punishment is necessary, he must be determined to win the struggle at all costs. To ensure this, he must arrange for every possible advantage to be on his side and must overlook no precaution. Should he lose the first contest, the horse will be encouraged and the second will be much more severe. On the other hand, if the trainer wins the first contest, it is probable that another will not be necessary.

3. Punishment should cease the instant the trainer has gained the victory or he will run the risk of engendering a feeling of sullen defiance in the horse.

After gaining a victory, the trainer should, by kindness, endeavour to obliterate any sore feelings caused by defeat in the horse's sensitive and nervous spirit.

CHAPTER IV

DRIVING

87. General principles

1. All officers, N.C.Os. and drivers of horse-drawn units must possess a thorough knowledge of the principles of driving.

2. Even and steady draught is a matter of paramount importance. The respective weights behind teams are calculated on the assumption that every horse will do his fair share of work, but this is impossible unless the driving is of a high order.

3. When draught is even and steady, every trace in the team is taut and the horses' heads are facing straight to the front. If, for example, an off horse's head is pulled inwards, his draught power is reduced and he is liable to become collar-galled.

4. Drivers will be exercised in the driving of a pair and of teams for vehicles with which their unit is equipped.

5. In the case of a team the lead driver is responsible for direction, distance and pace ; it is the duty of the centre and wheel drivers to see that all pairs in the team do an equal amount of work : if they allow the leaders' traces to become slack, they are putting too much work on their own horses, while, if they do not keep the centre and wheel horses up in the collar, the leaders will do more than their fair share.

6. Temperament should be the first consideration in teaming horses. A "slug" should therefore, if possible, not be included in a team of very willing horses. It is also important that the team should be sized so that the traces keep an even slope from the swingle-trees to the leaders' breast collars.

7. The position of the horses should frequently be changed ; an off horse, for example, loses his back muscles if he is never ridden, and is also apt to acquire the habit of leaning on the off side of the bit.

8. The training of the draught horse for a team is laid down in Appendix III.

88. Position of a driver standing to his horses and mounted

1. The driver stands to his horses as detailed in Sec. 35, 2, holding the reins of both horses in the right hand, the leading reins of the off horse passing over the neck of the near horse ; left arm hanging down by the side ; whip, stock uppermost, in the legging.

2. On the command " Prepare to Mount ", the driver proceeds as detailed for the single horse in Sec. 36, 1, i, placing the leading reins over the riding reins in the palm of the left hand from right to left.

With universal reins the riding horse's rein is held in the full of the hand, the end hanging down between the first finger and thumb, the little finger dividing the reins. The leading rein is held in the full of the hand, the end hanging down from the opposite side of the hand to that of the riding horse's reins.

At " Mount " he proceeds as detailed in Sec. 36, 1, ii, adjusts the reins so that he has an even feeling on both horses' mouths, takes the whip out of his legging with the right hand, which he passes through the loop at the end of the stock and places on the right thigh, back up, grasping stock and thong close together, with the elbow a few inches from the body, point of the whip in the hollow of the left arm.

This is the position of *attention*, mounted. (Sec. 37, 1.)

3. On the command " Sit at Ease ", both hands are placed on the pommel of the saddle, the right hand (holding the whip) over the left, point of the whip to the left.

4. On the command " Prepare to Dismount " the driver places the whip in his legging. Dismounting is carried out as laid down in Sec. 36, 1. If the driver cannot reach the ground with his right foot while the left is still in the stirrup, he takes both feet out of the stirrups and the body, at first supported by both hands, is gently lowered to the ground. He then comes to the position of standing to his horses.

5. On the command " Stand-at-Ease ", keeping both legs straight, he carries the left foot about twelve inches to the left and slides the right hand (retaining hold of the leading rein) down the riding rein of the riding horse so far as it will go ; the left hand hanging down by his side.

On the command " Stand Easy ", he fastens the leading rein to the riding rein by means of a thumb knot.

89. Use of the whip

1. The whip is chiefly used to control the off horse : *i.e.* to start him, to keep him in the collar and to guide him when

turning. It should be applied lightly on the off-side of the neck just in front of the withers, fingers closed on stock and thong. The whip is also used for saluting and by lead drivers for signals (Sec. 98).

2. The driver salutes with his whip as follows :—

i. When riding a horse of a pair or team in a wagon or limber at a walk :—

(a) He brings the whip to the *recover* (as with a sword).

(b) He passes it over the withers of the off horse, right arm extended, but with the elbow raised and slightly bent, hand in line with the waist, back of the hand up and inclined to the front, all fingers firmly closed on the stock and thong. He should hold his body erect, with the shoulders square to the front, and look the officer full in the face.

When the salute is finished, the whip is brought to the *recover* and then down to the position of *attention*.

The salute begins four paces from the officer and finishes four paces after passing him.

ii. When halted or at the trot or gallop, he salutes by coming to *attention* and looking the officer full in the face.

At the trot, he sits down in his saddle and will not rise for the period of the salute.

3. On rare occasions the whip may be used to punish the off horse only, when the thong should be applied on the flanks. This procedure is seldom justified and is liable to upset the rest of the team.

At all other times the thong should be held close against the stock with the end of the lash hanging down.

90. Driving without vehicles

1. Before recruits are allowed to drive horses in draught, they should be practised in manœuvring the team alone. The wheel drivers thus learn in the initial stages to keep the traces taut, and so to avoid spoiling or overtiring their horses.

2. The riding school is well suited for this training, as the teams are more under the instructor's eye than in the open.

3. The positions of the drivers in the teams should frequently be changed.

91. Draught work with drivers dismounted

1. All teams should be taught to work on the road with drivers dismounted. It will ease the horses to take the weight

off their backs and, when accustomed to this method, they will pull together well and quietly.

2. When a team is working with drivers dismounted, the lead driver should take the reins over the horses' heads and walk in front of them. As soon as the team goes quietly, he can walk on the near side.

3. The centre and wheel drivers loop their reins together over the neck of the riding horse, loose enough to allow both horses the free use of their heads. The drivers should walk on the near side, ready to urge on or straighten their horses at any moment.

4. So long as the team works quietly, the more it is left alone, the better.

5. The above is a suitable method for negotiating a long and gradual slope.

92. Traces

When not in draught, the traces of lead and centre horses are crossed in rear of saddle and the ends passed forward under the neck strap of the breast collar.

In the case of wheel horses the traces are passed through the trace bearers, then turned up under the hip straps and fastened in front of the bearers by their quick release attachment.

In the case of spare horses the ends of the traces are brought forward and fastened by the quick release attachment to the rings on the breast collars, the short traces being carried on the footboards of the vehicles.

93. Hooking in and unhooking *

At the "Hook in" both lead and wheel drivers place their horses to the wagon and in position for draught. They then proceed as follows :—

1. *Hooking in a pair—pole draught.*—The driver, holding the horses by the cheek pieces, will lead them one on each side of the pole up to the footboard; then turn them about, heads inwards: walk backwards three paces and couple them together by securing the lead rein of the off horse to the throat lash of the near horse by means of a thumb knot. He will then hook on the pole chains, hooks pointing inwards.

He will then engage the off trace of the near horse, near trace of off horse, off trace of off horse, then go to the near side

* This section is not applicable to artillery, see Gun Drills.

and engage the near trace of the near horse, and pole up. Pole chains will be so adjusted that, when the horses are in the collar, no weight of the pole rests on the collar. At the same time control of the pole should be retained. The points of the hooks should be inwards and downwards.

On the command *Stand to*, the driver will uncouple his horses, then pass the lead rein over the crest of the near horse, take a pace to his right front (which will bring him to the near side of his horses), turn left about, grasp the lead rein and the near horse's cheek piece with the right hand and remain steady.

2. *Unhooking a pair—pole draught.*—The reverse process to *Hooking in* will be followed. Traces will be passed from front to rear, through the trace carriers, and fastened to the hip straps (above the buckle); the leader's traces will be carried forward (through the flank straps with R.A.S.C. harness) and fastened on the breast collar.

3. *Long rein driving.*—See Sec. 106, 2.

4. *Hooking in a team—pole draught.*—Horses will be led alongside of the pole as detailed for a pair and the lead driver will bring his horses into position in a like manner. The wheel driver will hook on the pole chains, hooks pointing inwards, then engage the near trace of the off wheel horse, off trace of near horse, near trace of near horse, then *pole up*. The lead driver will engage the off trace of the off-wheel horse, then engage his own horses and take hold of the nosebands of the lead horses and stretch the traces.

5. *Unhooking a team—pole draught.*—The wheel driver will disengage the near trace of the near-lead horse, slacken the pole-chains, leaving them hooked on the pole-chain rings; he will begin with the near trace of the near-wheel horse, and work to the near trace of the off horse; he will then unhook the pole chains. The lead driver will disengage the off trace of the off-lead horse, and work through to the off trace of the near-lead horse. Then both drivers will uncouple their horses and stand in front of them, taking hold of the cheek pieces of each horse, holding the leading rein in the left hand.

On the command "*Stand clear*", the drivers will step backwards four paces, *i.e.* until both horses are clear of the pole, halt, then turn left about, taking the leading rein and cheek piece of the off horse in the right hand and the cheek piece of the near horse in the left hand.

6. *Hooking in a pair—shaft draught.*—The driver will hold his off horse and slip the off tug, then the near tug,

on to the shafts. He will then hook in from off to near, viz. off horse, off trace, off breaching, near trace, near breeching ; then engage the near horse, off trace, off breeching, near trace.

7. *Unhooking a pair—shaft draught.*—The driver will work from the near side of the near horse to the off horse, breechings being undone before the traces. He will then move the horses forward sufficiently to clear the points of the shafts from the tugs, place the shafts gently on the ground and take hold of his horses.

8. *Hooking in a team—shaft draught.*—The lead driver will double round by the front to the off shaft, the wheel driver will stand between the horses' heads, then take hold of the rein of the off horse with the left hand close to the bit, the right hand on the near tug of the back and belly band. The lead driver will raise the shafts and will give the word "*Ready*", on which the wheel driver will back the shaft horse, both drivers guiding the tugs on the shafts ; the lead driver will engage the off wheel trace with the swingletree, buckle the off side of the breeching of the off horse, and then start with the off trace of his own off horse, and work to the near side of his riding horse ; the wheel driver will engage the near trace and breeching of the off-wheel horse and then engage the near wheeler. The lead driver will stand in front, take hold of the nose-band of each horse, stretch the traces, then place the horses square with the vehicle. Traces should always be engaged before breechings are buckled.

9. *Unhooking a team—shaft draught.*—Each driver will unfasten, in reverse order, the part of the harness which he fastened up.

10. *Hooking in—pole-bar.*—Horses will be led alongside the pole as previously detailed, and coupled together.

The neckpiece pole-bar will then be connected with the pole-bar, the outside dee first, then the inside. The driver will then raise the draught pole and guide it through the pole-bar. Traces will then be engaged in the usual manner.

11. *Unhooking—pole-bar.*—The reverse process to *Hooking in* is followed.

94. Applying the brake

The brake should be put on sufficiently tight to check *but not to skid* the wheel ; it should be applied directly the vehicle leaves the top of the hill, but not before, and taken off immediately when level ground is reached.

95. Moving off

1. On the signal or command "March", the drivers ease the reins and close their legs to the riding horse, laying the whip over the neck of the off horse, back of the hand to the front, to ensure both starting together. On the command being given, every man in a team should start his horses to prevent loss of distance.

2. In all alterations to a quicker pace the drivers use their legs on the riding horse and the whip on the off horse, as described before.

96. Driving up steep hills

1. To obtain the maximum pull uphill, the draught horse must be able to throw as much weight as possible forward and into the collar. By assuming a lower and more advanced carriage of the head and neck than he would do if moving balanced and out of draught, he is able to add considerably to his power. He should therefore be allowed full liberty of rein when ascending a steep hill.

2. In manœuvring off the road, steep ascents should be taken in line to avoid checks.

When on a road or track, and if circumstances permit, the vehicles should be halted at the foot of the hill and sent up with about ten yards' distance between them.

3. On exceptional occasions, such as when the team is exhausted, an extra pair may be hooked in to each vehicle, but it must be remembered that this is of little use unless the ascent is fairly straight. If a long heavy pull is required, it is better to use a spare team or spare horses to take the place of those which are beginning to tire. It is of the utmost importance that horses should not be over-strained.

4. Should a check occur when the column is closed up, the lead drivers in rear must be prepared to throw off their horses to the right or left and keep moving if possible.

5. The pace should be a steady walk during the whole ascent, the top being thus reached more easily and surely than if an attempt is made to "spring" the hill.

6. Brakesmen or other dismounted personnel can also assist with drag ropes hooked into the drag washers, or by applying "wheel purchases" if the vehicle actually sticks. To use a drag rope as a "wheel purchase", it is hooked round the felloe near the lowest spoke and is then laid on the tyre and passed over the wheel to the front. Should the wheel

slip round, a drag rope may be wound round the felloe and tyre, with the turns about a foot apart to enable it to get a grip.

7. After going up a steep hill, the horses should be halted, but, when this cannot be done, they should be allowed to move slowly to recover their wind.

97. Driving downhill

1. In driving downhill, the lead and centre drivers must hold their horses back to allow the wheel driver to manage the vehicle, but the traces must be kept up ; the wheel driver, with his right hand on the leading rein, keeps his horses steadily in the breeching, taking care not to throw them on their haunches, and, in the case of shaft draught harness, not to let too much work fall on the off horse.

2. For moderately steep descents the brake can be used. Should a descent be so steep that the brake is not sufficient, the detachment must hold on with drag ropes hooked into the drag washers.

98. To decrease the pace (halt from walk, walk from trot, etc.)

1. The lead and centre drivers will at once bring their whips to a horizontal position in front of the forehead with the right hand, back of the hand to the rear, as a signal to the wheel driver that they are about to pull up. All drivers will then close both legs to their riding horses, increase the tension on their reins, thus decreasing the pace, and take their horses out of the collar. The wheel driver, with his right hand on the leading rein, puts his horses back in the breeching.

As soon as the vehicle stops, every horse is again put into the collar.

2. To avoid confusion and accidents, each lead driver must be careful never to omit the signal for decrease of pace.

3. At any pace but the walk the lead driver must allow the wheel driver sufficient time to stop the vehicle before he comes to the halt.

99. Wheeling to the right

The lead driver wheels his riding horse by leaning his body to the right, at the same time applying his left leg. He brings his off horse round by sliding his right hand down the leading rein, also placing one finger of this hand on the riding horse's right rein.

He must keep his off horse well up to prevent the off centre or wheel horse getting one leg over the leader's traces.

The centre and wheel drivers apply their whips over their off horse's neck and apply both legs to their riding horse to ensure that both follow in the tracks of the leaders, and, in the case of the off-centre, to keep the traces taut.

100. Wheeling to the left

The lead driver wheels his riding horse by leaning his body to the left and feeling the left rein. He brings his off horse round by applying the whip over his neck.

The centre and wheel drivers feel the leading rein and the riding horse's right rein with the right hand, and at the same time apply their left legs, to ensure that their horses follow in the tracks of the leaders.

101. Wheeling about

1. In this case the drivers lean their bodies slightly back, and to whichever side they are wheeling, applying the aids detailed in Sec. 99 or Sec. 100, as the case may be.

2. In order to prevent the vehicle from locking, the wheel driver must be very careful to keep up his off or riding horse, as the case may be, and the lead driver must on no account make the circle too small.

3. Vehicles should be advanced one yard before being wheeled about from the halt.

102. Reversing in narrow roads

Before any attempt is made to reverse, the vehicle should be drawn up as close to the side of the road as possible. It is then unlimbered and the lead and centre horses taken out. Each portion is reversed separately, limber and team last, and then limbered up again.

103. Inclining

The aids are the same as for wheeling, the team going forward again when the required direction has been gained.

104. Wheeling off a road through a gate

When wheeling off a road through a gate, or on other occasions when a sharp turn has to be made through a narrow defile, the lead and centre drivers must be careful to ease the traces and leave the whole of the wheeling of the vehicle to the wheel driver. The wheel should not begin until the lead

horses are nearly opposite the centre of the gateway ; hence, in going uphill, the turn should be approached at a fair pace ; otherwise the wheelers will not be able to do all the work at the turn.

105. Crossing a broad ditch

The ditch should be taken square and at a fair and even pace throughout. The tendency is for the lead driver to go too slow approaching and descending into the ditch, too fast springing up the far side, and to slacken up as soon as he reaches the top, which is just the time when he should apply the maximum work : the result is that the wheelers have the vehicle jerked forward into them whilst descending the ditch and are left with all the work to do whilst going up the far side.

106. Driving a pair of horses from the box

1. When driven from the box, horses will neither work comfortably nor be under perfect control unless so coupled that their heads are straight when on the move with an even bearing on the reins. The bearing of the bits on their mouths should be light but constant and the driver should never allow the reins to slip through his fingers.

A pair of horses, worked as such, should frequently be interchanged. This will prevent the acquirement of bad habits, such as pulling away from the pole, shouldering the pole, etc.

2. *To put to.*—Horses will be hooked in as in ride and drive. The coupling pieces of reins will be crossed (off over near), the ends of reins connected, and, when not *standing to* or when *looking round*, they will be laced on the near hip strap in such a manner that one pull will release them. The coupling reins will be so adjusted that, when the horses' heads are square, the driver will have an equal feeling on both horses' mouths.

The correct adjustment of the coupling reins requires great care. With a view to this, the outer reins have a number of holes punched in them, up and down which the buckles of the coupling reins can be shifted, thus enabling them to be shortened or lengthened to suit the length of each horse's neck and the carriage of his head, *e.g.* if a horse has a long neck and pokes out his nose, his coupling must be lengthened.

When unhooked, the near rein will be laced on the near hip strap and the off rein on the off hip strap of the near and off horses respectively.

3. *How to hold the reins and whip.*—The near rein passes over the forefinger of the left hand, the off rein between the middle and third fingers, both reins fall through the palm

of the hand and hang loose on the left side of the drivers' knees. The reins are kept in position in the hand by the pressure of the third and fourth fingers assisted by the second, the thumb and forefinger not being used for this purpose; the wrist should be rounded.

The whip should be held between the lower part of the thumb and of the forefinger of the right hand, thus leaving the fingers free. The point of the whip should be carried up, inclined across the body and to the front. The position of the whip should not be changed when the right hand manipulates the reins. When required, the right hand can be placed on the reins in front of the left, the first and second fingers on top of the near rein and the other two between the reins. The former grip the near rein and the latter the off rein.

Reins should always be shortened or lengthened from the front, *i.e.* either pushed back or pulled out through the left hand.

4. *Use of the whip.*—The whip should be employed as sparingly as possible. When used, the thong should be applied on the shoulder and drawn across from right to left, or vice versa.

Saluting.—A soldier driving a horsed vehicle will bring his whip to the perpendicular position, with the right hand resting on the thigh, and turn his head smartly towards an officer in passing him.

Soldiers sitting on and in vehicles will salute as laid down in the Manual of Elementary Drill (All Arms), 1935, Sec. 74, 8.

5. *Turning.*—To turn or incline to the right, the right hand grasps the right rein in the full of the hand, knuckles up and inclined to the front. This gives the firmest hold and at the same time allows the position of the whip to be maintained. To turn to the left, the left rein is grasped in the same manner. In both cases the rein should be pulled towards the centre of the body; otherwise in turning to the right the tendency is to pull the right rein out of the left hand; at the same time the left, or outer hand on the turn, should always give.

6. *Driving uphill.*—An even and steady walk should be maintained in driving up a steep hill; if the load is exceptionally heavy and circumstances permit, the horses should be allowed to incline from one side of the road to the other as the wagon ascends.

7. *Driving downhill.*—The pace cannot be too slow in descending a hill, especially in moving off the top; the brake should be applied when the horses take the breeching, but not before. When the shoe is used, the wheel to which

it is applied should be chained to the vehicle ; this prevents all chance of accident should the shoe become unshipped in travelling over rough ground.

8. The preparation of a horse for driving with long reins from the box is laid down in Appendix IV.

107. Refractory draught horses

1. The vices enumerated in this section should only occur in the case of hired horses or of remounts joining on mobilization.

2. *A horse which refuses to be led up to his place in draught.*—If all persuasion fails, he should be blindfolded with a horse rubber and then led up, the bandage not being removed until the team starts.

3. *A horse which refuses to stand still when being hooked in.*—One fore leg should either be held up or strapped up.

4. *A kicker.*—Use either a kicking strap or a tight bearing rein.

5. *A puller.*—Use a bearing rein and side rein.* Both should be fitted tightly when the horse is standing still, or they will be useless when he moves.

6. *Leaning on the pole.*—A dandy brush strapped to the pole will often cure this.

7. *Leaning away from the pole.*—Change the horse's side.

8. *A horse which jibs at starting.*—Horses jib from various causes, such as sore shoulders, too heavy a load, bad driving, sore mouth, lameness and vice. *The whip only aggravates the evil.*

If there is plenty of time, one of the horse's fore legs should be strapped up until he tires, when the attempt may be made to start him. Tapping a horse below and behind the knee is sometimes effective.

The best procedure is to man the wheels and, if necessary, to use drag ropes. On the command "March", the vehicle is set in motion, the drivers at the same time applying the correct aids.

SPECIAL INSTRUCTIONS FOR PACK ANIMALS

108. Position of driver

1. On parade the driver stands to attention on the near side of his animal, holding the loop of the rein in his left hand, which should hang down by his side, while with the right

* Neither bearing reins nor side reins are part of peace equipment stores, but they can be made up by the saddler.

hand he takes hold of the double rein about six inches behind the animal's jaw, keeping its head in its natural position.

"Stand at ease."—Keeping both legs straight, carry the left foot about 12 inches to the left, as at dismounted drill, and slide the right hand down the rein to the full extent of the arm.

"March."—Every driver will at once step off as at dismounted drill, causing the animal to start off steadily at the same time by a gentle feeling of the leading rein. He will march abreast of his animal and should rarely pull at the leading rein, as a loose rein and a light hand are required.

"Halt."—The driver halts as at dismounted drill, coming to the position of attention and halting the animal at the same time by a gentle pressure on the leading rein. Drivers should be taught to lead their animals from either side.

2. To salute when passing an officer, a driver should look towards him without moving his hand or altering his position.

109. Leading pack animals

1. On good ground pack animals should always move closed up to their proper distance, but in going up or down hill and in crossing difficult ground the drivers should increase the distance and regulate the pace as circumstances may require. Should any animals appear distressed, they should be halted and off loaded, the loads being transferred to one of the spare animals.

2. The driver should always give the animal a long rein when moving over rough or hill country; this is quickly effected by letting go the rein with the right hand, seizing the T-piece from the outside of the ring of the bit and pulling the rein through. In difficult ground additional assistance can be given by steadying the loads and helping the animals along. It may even be necessary to unload the animals and carry the loads over an obstacle by hand.

For ascents the driver must tighten the breastpiece and loosen the breeching, doing the converse for descents. This can be quickly done without halting by means of the chain attachments of the breastpiece and breeching.

3. When a halt is ordered, pack animals will be led to the side of the road (on hill roads to the side nearer the hill) and any driver who has lost ground will close up to this proper distance. They will then be turned with their heads facing inwards towards the centre of the road. If the width of the road does not admit of this, the drivers must stand to the heads of their animals and keep them from turning. Closing up to recover distance on the move must be done steadily

by a gradual increase of pace, not by rushing. Trotting should not be allowed without orders.

4. It will happen sometimes on narrow roads that the driver must march in front of his animal. When this is the case, he must resume his position beside it and close up again to his proper distance as soon as the road widens sufficiently.

5. If a load becomes disarranged, the subsection will fall out to the most convenient flank as soon as room on the road can be found, and, when the load has been readjusted, the subsection will, as soon as practicable, regain its place in column.

When a laden pack animal falls, his head should be held down to prevent him struggling and the load must be removed before he is allowed to get up. In very difficult or dangerous ground the saddle should be removed as well as the load.

When a halt exceeding 30 minutes is ordered loads should, if possible, be taken off the pack saddles.

CHAPTER V

ANIMAL TRANSPORT—WHEELED

110. General

1. Some form of wheeled transport, drawn or propelled by animal power, is in general use in every country in which the roads or the nature of the ground admit of its employment, although it is disappearing from normal British field formations. The superiority for general purposes of any class of wheeled transport over pack or carrier transport is manifest ; it is more economical in personnel and animals, occupies much less space on the line of march and, in conditions suitable to its use, is more reliable.

2. *Employment of local vehicles.*—Experience has proved that the vehicles in general use in peace by the inhabitants in any given district are in many ways eminently suitable for employment during military operations in that district. Consequently, when transport units have to be improvised, the local vehicles should invariably be utilised to the fullest possible extent for military operations.

3. Mounted drill with wagons is dealt with in Secs. 115 to 125.

111. Systems of draught

1. The relative advantages of pole and shaft draught for wagons are discussed in para. 4, below. In all vehicles the draught is taken by means of traces attached to bollards or swingle-trees, or by short traces attached to the shafts themselves. This latter method is termed *farmers' draught* and is that used in most farm vehicles in England.

The systems of draught employed in the vehicles most likely to be met with in the British service are briefly described in the following paragraphs.

2. *Mule wagons.*—The South African mule wagon is fitted with a vertical pole and the wheelers pull from swingle-trees. The harness is of the simplest description and consists of a breast collar, breeching and back pad. A *trek chain* is attached to the fore carriage, wrapped round the pole, and runs between each pair of mules. To this chain double swingle-trees are attached and each pair of mules pulls from one of these, except

the leading pair, which has long traces similar to those used with ordinary service harness. Teams of six or ten are normal according to the capacity and weight of the vehicle.

3. *Ox wagons*.—In the South African ox wagon the arrangement of the trek chain is similar to that of the mule wagon, but the swingle-trees are replaced by yokes. These are round wooden bars, one of which is passed over the necks of each pair of oxen and held in position by a pair of wooden *sheys* and a *neck strop* of raw hide. The oxen take the draught from the top of the shoulder.

In Southern Europe the oxen pull from a bar resting on a pad on the forehead. They work between shafts which are attached to the ends of the yoke.

In India the draught for bullocks is slightly different. The conformation of the animal enables it to support great weight on its neck and from there to take the draught. Thus no saddle is necessary and the currie bar is a stout wooden pole which rests on the animal's neck. Traces are unnecessary.

4. *Carts*.—For carts drawn by two or more horses or mules four systems of draught are in common use :—

- i. Shafts and outrigger.
- ii. Pole and neck-bar.
- iii. Pole and belly bugle.
- iv. Tonga draught and currie draught.

i. *Shafts and outrigger*.—This method is adopted in the construction of the service Maltese cart. The off horse pulls in the shafts and the near horse from a swingle-tree attached to an outrigger which projects beyond the near wheel. This form of draught is faulty, as the near horse is pulling too far out on the near side of the cart. It has been adopted to enable the cart to be used with one horse, instead of a pair, when required.

In countries in which carts are usually drawn by pairs and not by single animals some form of pole draught is generally adopted.

ii. *The pole and neck-bar* is the method of draught employed for gun-limbers and for limbered vehicles generally. It is also in general use in South Africa for the lighter types of two-wheeled vehicles—Cape carts. The end of the pole is supported by a bar which is attached to the horses by straps passing over the neck just in front of the withers. The bar hangs immediately in front of the horses' chests and allows considerable vertical and lateral play to the pole. The horses pull from traces attached to swingle-trees in the ordinary manner. This is an excellent system of draught for the

purposes for which it is employed, but does not give the horses enough power over the pole for the heavier types of carts. In limbered vehicles this disadvantage is greatly diminished, since the rear half of the vehicle imparts considerable rigidity and stability to the limber.

iii. *The pole and belly bugle* is used with success for the heavier types of mule cart in America. The belly bugle consists of two semi-circular pieces of metal fixed rigidly to the pole abreast of the saddle pad. It passes under the belly of each animal and has a ring at each end at about the same level as the pole. The pad is attached to the pole and belly bugle ring by means of straps and the animals pull from traces and swingle-trees in the ordinary manner. The chief disadvantage of this method of draught is that the belly bugle is a somewhat heavy and clumsy arrangement and, once broken, cannot be repaired in the field.

iv. *Tonga draught and currie draught*.—The same principle underlies these two forms of draught and it differs only in the method of its application. In both cases a cross-piece is fixed to the end of the pole and rests on the saddle pad of each animal. In tonga draught, which is the system in general use in India, the necessary elevation is given to the end of the pole by inclining it upwards from the bottom of the body of the cart. The draught should be taken from traces, but in practice, owing to the rigidity of the cross-piece of the pole and the stretching of the traces, a considerable proportion of the draught is taken by the pad itself. The Indian *ekka*—a one-horse cart—has in fact no traces at all. The pad is prevented from slipping backward by a broad strap attached to it which passes across the animal's breast. This system is undoubtedly faulty, as the line of draught, instead of passing direct from the body of the vehicle to the animal's shoulder, passes up the inclined pole through the pad and down again to the breast strap. It has been found, however, to be the form of cart draught best adapted to India, where the natives thoroughly understand how to make the best use of it and have been accustomed to it for generations.

In currie draught, which is largely employed in Russia and in India, the pole is horizontal and the cross-piece obtains its necessary elevation by means of a vertical spar attached to the end of the pole. The angle thus formed is necessarily a source of weakness, although the vertical spar is strengthened as far as possible by an inclined bar attached to swingle-trees.

In Eastern Europe a four-wheeled cart, adaptable to either pole or shaft draught, with a detachable body and a narrow wheel track, is used; the vehicle is mostly long and narrow and quite flexible.

A two-horsed cart carries about 1,000 lb. and a one-horsed cart about 450 lb.

5. *Camel vehicles*.—The camel has been employed as a draught animal in India and elsewhere with success. An Indian Army transport cart or any similar vehicle can be readily adapted for camel draught by removing the pole and providing long shafts adjusted at an angle of about 30 degrees with the bottom of the cart. The camel will draw a useful load of at least twice as much as he will carry on his back. In the absence of roads, however, it is advisable to employ the camel as a pack rather than as a draught animal.

6. *Sand-carts and sledges* cause less suffering for the wounded in desert warfare than camel cacolets, when the ground admits of their use ; sandy ground is suitable for sledges, which are best drawn by a quiet horse.

112. Examination of vehicles

1. It is only by giving constant attention to the vehicles that transport service can be efficient.

2. *Examination*.—All military transport vehicles, when in use, should be examined frequently and adjustments made, where necessary, to keep them in serviceable running order. If this is done properly, the life of a vehicle is considerably prolonged and the necessity for extensive repairs avoided.

3. *Defects*. i. *Woodwork*.—The defects to be looked for in the woodwork are shrinkage, cracks, decay, worm and general damage.

Shrinkage and cracks are caused by the exposure of the woodwork to the sun or by its being kept long in a very dry store. Shrinkage makes itself apparent by the looseness of iron fittings in the wood.

In very dry climates it may be necessary at times to keep the wheels constantly wetted to prevent the woodwork warping, cracking and shrinking.

When vehicles are parked for some time without being moved, wheels should be turned round every few days to change the spokes on which the weight rests, the working spoke being marked with chalk. In the case of wheels with rubber pads a dummy hard wood pad should be substituted to take the load.

Decay is usually due to the penetration of moisture under the ironwork or in the joints ; it is detected by using a hammer and pricker.

Worm is to be looked for in parts made of ash and is detected by small pin-pricks and holes, and white dust on the surface.

ii. *Ironwork*.—The defects to be expected in ironwork are wear from friction—as in eyes and hooks—corrosion from rust, wear due to shrinkage and looseness of rivets, bolts and nuts.

iii. *Wheels*.—These may become defective for a variety of reasons, including loose tyres, fractured, worn and dirty pipe boxes and loose and decayed woodwork.

iv. *Springs*.—Shackle bolts wear, leaves and centre bolts break, leaves become rusty and anchor bolts break.

v. *General*.—*Paint* may have rubbed off or become blistered from exposure.

Strapping may be perished from age and exposure or become stiff from want of dubbin.

Canvas coverings may be torn or become open at the bindings, loose or rotten.

The *axletree bed* may be decayed, split or shrunk; *summers, bolsters, futchels, carbeds, splinter bars, brake bars, perch* and other portions of the framework of the wagon may have become shrunk, decayed, broken or badly shaken. The *pole* and *splinter bars* may have been similarly damaged or the surface of the former may have become roughened or splintered.

113. Repairs

1. When repairs or periodical overhaul of a vehicle are carried out, the first essential is to strip the vehicle thoroughly; all mud and grease should be cleaned off and all the blistered and roughened surface of paint should be taken off, but, where old paint is hardened and smooth, it is not necessary to remove it.

2. *Woodwork*.—All woodwork should be scraped and paintwork burnt off, decayed and worn parts being replaced either wholly or partially by splicing or by halving joints. The attachment of iron or steel plates may render worn and broken woodwork serviceable.

3. *Ironwork*.—Small ironwork is cleaned by burning off the paint or, if rusty, by heating it and oiling it while hot. It is then repaired and adjusted to correct the form and dimensions. Should such ironwork be much worn and broken, it is usually cheaper to replace it than to repair it. All rivets should be tightened up.

Drag-shoes should be inspected to see that the steel soles are not worn through; defective shoes should be replaced as soon as possible. Spare soles are issued for repairs; if the shoe is allowed to become worn through, it is difficult to repair.

4. *Axletree*.—The axletree should be removed and the axletree bed thoroughly examined. If it is much decayed, split

or shrunk, it should be replaced by a new one. Tightening the axletree bands by *upsetting* them will be sufficient to bring the bed in position if it is slightly shrunk. In replacing the axletree care should be taken to put it in with the lead to the front and correctly and firmly seating it therein.

5. *Poles*.—If poles have become rough and splintered on their sides, they should be smoothed and painted.

6. *Springs*.—Springs should be dismantled and all rust removed from the leaves by heating in a forge or scraping. Whilst still hot, they should be dipped in old oil or brushed with oil on a wire brush and then reassembled. Graphite and grease, if available, may be used as a lubricant. Broken and worn centre pins, shackle bolts and U-bolts should be replaced.

7. *Wheels*.—i. The felloes are the most vulnerable part of the wheel; decay usually begins at the extremities immediately under the tyre from moisture penetrating at the joints. The felloes are liable to droop at the joints, causing openings at the bosom. This defect is remedied by removing the tyre and cutting small wedge-shaped pieces off the ends of the felloes, shortening the tyre to correspond and putting the wheel together again.

ii. Felloes slightly split can in some cases be strongly repaired by the insertion of screws. When the joints of the felloes have shifted and the tyres become twisted, they should be adjusted on an anvil with a flatter and sledge hammer.

iii. The most expeditious way to put in a felloe is to take a new felloe bored for the spokes, dowels and bolts and fit it accurately to the length of the old felloe; bore it horizontally through the centre for four iron rivets equidistant from one another, two between the spokes and one outside of each, and countersink the holes. Next slit the felloe vertically through the centre with a hand-saw, slightly enlarge the holes with a gouge as they are diminished by the thickness of the saw; paint over the inner surfaces with white lead, or paint if it can be obtained.

Remove the damaged felloe without injuring the dowels or tongues of the spokes and the tyre bolt; insert the two parts of the new felloe into the wheel one on each side without splintering the ends; rivet the two parts together using burrs; replace the tyre bolt and clean off the felloe. If this operation, which can be performed in a short time, is done well, the wheel will be almost as strong as before.

iv. The spokes are not likely to become perished within six or eight years, but may be broken by accident; they should then be replaced. Rot may set in at the feet if moisture

enters about the bolts, but this can only be detected by removing the flanges ; it is not necessary to do this unless the feet are suspected of being rotten. The tongues are also liable to rot, but normally it is not necessary to remove the tyre to examine them ; if the tyre should be off, advantage should be taken to examine and replace any damaged spokes.

v. On occasions when artificers are not available, the following methods of temporary repair to wheels are suggested in the nature of makeshifts :—

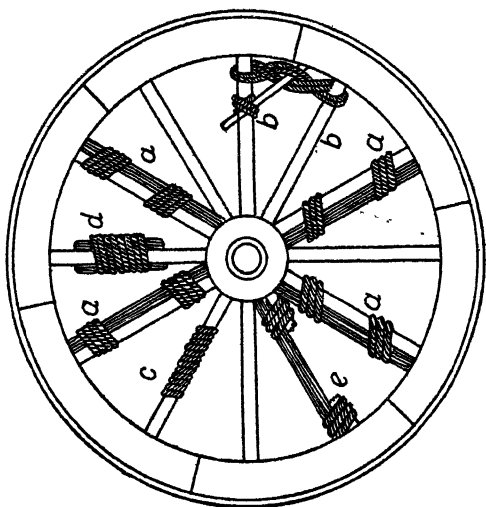


FIG. 24.

(a) *Loose spokes.*—Wedge emergency spokes between the nave and felloe, close to the spokes lying opposite one another as at (a) in Fig. 24.

(b) *Loose dowels.*—Lash the two spokes between the loose dowels and rack up as at (b) in Fig. 24.

(c) *Slightly cracked spokes.*—Strengthen the spoke by tightly binding cordage round the damaged portion as at (c) in Fig. 24.

(d) *Spokes which are badly cracked.*—Place two pieces of iron on either side of the damaged portion and secure tightly by cordage as at (d) in Fig. 24.

(e) *Broken spokes.*—Wedge in an emergency spoke and secure it with cordage as at (e) in Fig. 24.

(f) *Broken felloes*.—If a felloe is so damaged that it will no longer support the weight of the wagon when working, turn the wheel so that the undamaged felloe supports the weight, then by means of cordage secure the wheel to the vehicle so that it cannot turn and place the drag-shoe under the wheel. Remove as much of the load as can conveniently be done.

vi. Wheels which are so damaged as to be unserviceable may be replaced, if another wheel is not available, by a pole,

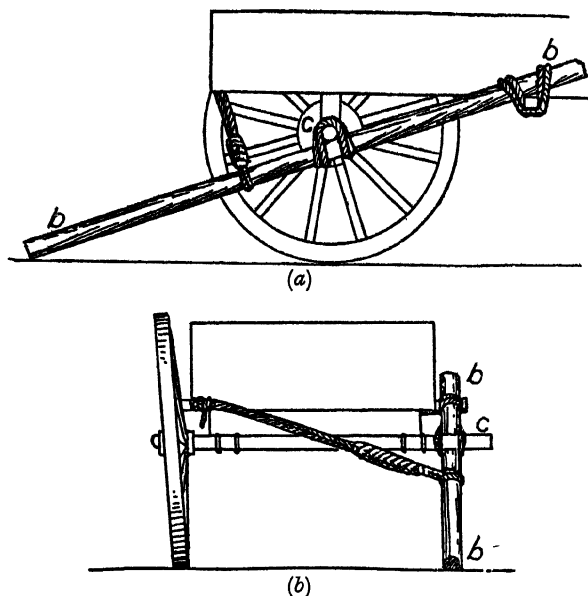


FIG. 25.—Temporary substitute for a wheel.

as shown in Fig. 25 (a) and (b). The pole (b)—(b) is secured at its lower end by cordage to the body of the wagon on the opposite side so as to prevent the cordage at (c) slipping off the axle.

vii. The condition of the pipe-box and axle arm can be gauged by taking a spoke in each hand and shaking violently to and fro. Any looseness above that necessary for freedom of running is a defect. The cause of the looseness can only be definitely ascertained by removing the wheel from its arm,

for it may be due to wear of either arm or pipe, either at the shoulder or on the bearing surfaces. Play at the shoulder can be corrected easily by washering, but the repair of a worn axle arm is more difficult and can only be carried out by a skilled workman. Wear of the bearing surface which is not manifest to the eye is negligible. Even though there may be no apparent wear, the wheel should be removed in order that the pipe-box may be inspected. Pipe-boxes, being made of a very brittle material, are liable to fracture; they frequently become broken, sometimes into many pieces. Although the closeness of the bearing on the axle arm keeps the pieces in their proper relative positions and the wheel may run in that condition for a long time without causing damage, grease can filter through the cracks and is likely to injure the spokes.

If grit enters the pipe, scoring will soon occur; it will readily be detected by the noise of the wheel in travelling. The wheel should be taken off, the pipe and axletree arm thoroughly cleaned and all burrs in the pipe removed with a half-round file; the arm should be examined on the underside and, if grit or small pebbles are found sticking to it, they should be removed with a hammer and file and the wheel greased and replaced.

Care should be taken that the pipes are kept clean and greased; they should be greased every day on the march if the axles are not capped; if the axles are capped, they should be greased once a week. The facility afforded to draught by well-lubricated wheels and axletree arms is considerable.

To grease the axle, remove the wheel and carefully clean the axle and inside of the pipe-box. Then smear the inside of the pipe-box and the outside of the axle with fresh grease and replace the wheel.

114. Loading of vehicles

1. *Wagons.*—The unit commander should have an inventory of what each wagon is to carry made out the day previous to a march, unless they are vehicles horsed and loaded according to the official tables in the Field Service Manual. Bulk as well as weight must be taken into consideration in assessing the loads: this is necessary to secure good packing and efficient transport service. The weights of the various articles are given in the Field Service Manual.

The load which is to go in each wagon should be placed beside it before the packing begins. An experienced man should then get up into the wagon and name the articles in the order in which he wishes them to be handed up to him. When

the packing is complete, the tarpaulin should be roped carefully over the wagon to ensure against wet and loss.

2. *Two-wheeled carts*.—Care should be taken that the cart, when loaded, is properly balanced. There should be a weight of about 10 lb. on the tugs. If the load is placed too far forward, the off horse is unnecessarily weighted; if too far back, draught becomes more difficult. If driven with long reins, the weight of the driver must be taken into consideration in arranging the balance.

3. *Rules for loading*.—i. The capacity of service types of vehicles is laid down in Appendix V. —

These loads must not be exceeded.

ii. The body of the load, *i.e.* the part which is contained in the body of the vehicle, should be formed of the heavier and more strongly packed portion of the load.

iii. The heavier articles of the load should be loaded to the rear.

iv. A load which has moved should be immediately adjusted.

v. Loads should be roped up and sheeted before moving off.

vi. Loads should be carried normally with the tail board in position.

vii. Raves should not carry dead weight.

viii. Lamps, buckets, water tins and other articles slung at the rear of vehicles should be so loaded that they ride silently.

4. *Explanation of the rules*.—i. Whilst it is a matter of common sense that the heavier articles should be lower in the load than light ones, that articles required first in camp should be loaded last and that raves must not carry dead weight, constant supervision is required to ensure safe and economical loading.

ii. It is an axiom among civilian carters that the nearer the horse is to his work, the easier is the draught. The apparent departure from this in para. 1, iii, is due to the fact that forward loading of heavy articles tends to bind the Jacob's lock.

iii. Raves are provided to increase the bulk capacity of the wagon for light loads, *e.g.* unbaled hay and straw and green fodder; their attachment should not be used for increasing the capacity of the wagon for cased goods, even in warehouse or depot work.

iv. The brake gear must not be used by loaders as a loading block.

5. *Responsibility.*—The officer or N.C.O. in charge of a convoy, or the driver of a single vehicle, is responsible for the method of packing and securing and for the safety of loads.

A driver must not be taken from his animals to assist in loading.

6. *Mixed loading of supplies.*—i. Bread and meat should be loaded apart from each other.

ii. Petrol, oil, lubricants and disinfectants should be assigned a separate vehicle or separated from other supplies by a few empty cases.

iii. Sacks should be loaded with the necks inwards.

iv. Hay wagons are best loaded on the header and stretcher plan.

MOUNTED DRILL WITH WAGONS

115. General instructions

1. The objects of mounted drill with wagons (animal transport) are to provide :—

i. Simple rules for the movement of animal transport units, should these be formed.

ii. A basis for training animal transport personnel.

2. General instructions for harnessing and driving for both pack and wagon transport, and technical information regarding all forms of animal transport will be found in the various sections of this manual.

3. There are at present no establishments for animal transport companies for service either in war or peace. The drill laid down in the following sections has therefore been so designed that it can be applied to companies of almost any size. In consequence it has not been possible to enter into details when these depend on the number of men and animals involved.

4. Driver recruits will be trained in accordance with the principles laid down in the manual of their arm, and this manual, where applicable, before being instructed in the drill given in this chapter.

116. General rules

1. Companies will be organised in sections, each commanded by an officer. A section should not normally comprise more than 24 wagons. Sections may be subdivided into sub-sections commanded by N.C.Os. A section of 12 wagons or less will form in line in single rank. With a greater number it will be formed in two ranks.

2. Orders when on the move should, whenever possible, be given by signal. Orders will be repeated by section and subsection commanders. The pace is always named before the word "*March*" and is either "*Walk*" or "*Trot*".

3. The normal pace is the walk. At wagon drill the pace will never exceed a trot. When trotting, and it is required to increase the front, the leading wagon will pull up to a walk without any further command. When walking and it is required to do the same, the wagons in rear will increase their pace to a trot.

When wheeling at a trot, the wagons on the inner flank will pull up to a walk, resuming the original pace when the signal "*Forward*" is given on the completion of a wheel.

In reversing, each vehicle wheels about independently.

4. Intervals are measured from lead driver to lead driver, or from near wheel to near wheel. The intervals between vehicles (horse-drawn) are :—

Full	...	...	...	...	15 yards
Half	...	...	...	...	8 "
Close	...	...	...	...	4 "

Between sections :—

Full	...	...	...	...	22 "
Half	...	...	...	...	12 "
Close	...	...	...	...	8 "

5. Distances are measured from the tail of one animal to the head of the animal immediately behind it; between wagons, from the tailboard of one wagon to the head of the following team. Normal distances with horse-drawn vehicles are :—

In column of route	...	...	...	...	4 yards
Between sections in column of route	...	...	...	...	10 "
Between sections in close column	...	...	...	...	10 "

6. Wagons will be numbered consecutively from the right, as in dismounted drill.

117. Turning out

1. Section serjeants will inspect their men in front of the stables, march the men into the stables and supervise the harnessing up.

2. When harnessing up is completed, the section serjeant will form up the section outside the stables. Drivers will stand between their horses, with the riding horse on the right, the off horse on the left, holding the leading rein of the

off horse together with the cheek piece in the left hand. The horses' heads should be raised as high as the driver's shoulder and the whip placed in the leg-iron, point downwards.

3. The dismounted men will be marched to the wagon park and will arrange the vehicles six yards apart and eight yards between ranks.

4. At the "*Fall in*", the sections will be marched to the wagons and formed up with the drivers facing their respective vehicles.

5. At "*Hook in*", the drivers will act as in Sec. 93.

118. Mounting (ride and drive)

1. *Driver*.—As laid down in Sec. 88, 2.

2. *Spare men* (one spare man).—Spare men should fall in in line with the front axle.

i. Prepare to mount.

Turn to the right, place both hands on the guard iron of the driving seat, the right foot on the axle arm, and the left foot on the splinter bar, and remain steady.

ii. Mount.

Spring smartly up to the footboard, sit down on the box at *attention*.

3. The *position of attention* for soldiers sitting on or in vehicles is as follows :—

They will sit upright, looking straight to their front, arms hanging from the shoulders, knees together and toes in line with the edge of the footboard ; if seated beside a guard iron, they will grasp it with the nearer hand. Hand straps, if provided, will also be grasped.

To *sit at ease*, they will place the hands on the knees. To *sit-easy*, they will relax and allow the hands to fall between the thighs.

119. Dismounting (ride and drive)

1. *Driver*.—As laid down in Sec. 88, 4.

2. *Spare men*.

Prepare to dismount.

Stand up, turn to the right, walk backwards to the end of the footboard, place both hands on the guard iron, lower the body until the left foot rests on the splinter bar and the right foot rests on the axle arm.

Dismount.

Spring smartly to the ground, turn to the left and stand to attention in line with the fore-carriage.

120. Mounting the box (long-rein driving)

1. Drivers will look round and see that all harness and couplings are correct, place the whip in the socket (or on the footboard) and lace the rein to the hip strap of the near horse.

They will then fall in one pace from and facing the heads of their horses.

2. Unlace your reins and stand to.

Drivers will double round to the near side, unlace their reins and divide them for driving, in the left hand, as follows :—

- i. Near rein passed over the forefinger.
- ii. Off rein between the middle and third fingers. The pressure of the third and fourth fingers keeps the reins in position and prevents them slipping through the hand ; the spare end of the reins is hooked up to the little finger. The arm is raised as high as possible.

3. Prepare to mount.

Place the right hand on the guard rail of the box seat, the right foot on the axletree, spring up and place the left foot on the splinter bar.

4. Mount.

Carry the right foot on to the footboard, followed by the left foot, and sit down on the off side of the box.

Take the whip out of the socket (or off the footboard).

Spare men mount after the drivers as quickly as possible, take their seats and sit to attention.

121. Dismounting (long-rein driving)**1. Prepare to dismount.**

Spare men.—Jump to the ground and stand to attention in line with the fore-carriage.

Drivers.

i. Place the whip point foremost on the footboard under the legs.

ii. Hook up the spare end of the reins to the little finger of the left hand. Stand up, turn to the right and, holding the reins up in line with the shoulder, walk backwards along the footboard, catch hold of the near side guard iron with the right hand, put the left foot on the splinter bar and the right foot on the axletree.

2. Dismount.

Drivers jump to the ground, standing up to attention in line with the forecarriage, holding the reins up as high as possible.

Drivers must always mount and dismount from the near side.

3. Lace up your reins.

Drivers lace their reins through the hip strap of the near horse and take up their positions facing their horses.

122. Position on the box

1. The driver will sit erect, with both elbows close to the body, left forearm and upper arm forming a right angle, back of the left hand to the front, about six inches from the centre of the body, wrist bent. The reins and whip should be held as in Sec. 106, 3. The knees should be slightly bent and touching, the ankles close together and the feet firmly planted on the footboard, toes in line with the front edge.

2. *Spare men.*

Attention.

Sit-at-ease.

See Sec. 118, 3.

Drivers.

Sit-at-ease.

Left hand dropped on to left thigh and whip dropped on to left forearm.

123. Posts of officers, warrant officers, N.C.Os., etc.

1. The posts of officers, etc., in close column are shown in Plate XXII. In column they will be the same.

2. In column of route commanders of companies, sections, etc., will lead their commands; officers and N.C.Os. second-in-command will be in rear of their companies or sections. Company serjeant-majors will ride in front of the company, behind the company commander, in rear of the trumpeter.

124. Section drill

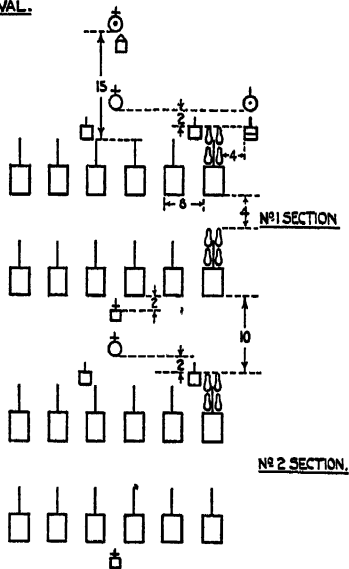
1. The sections will be drawn up in line as shown in Plate XXII.

2. *Advancing from line.*

**The section will advance, by the centre (right or left).
March.**

The commander of the subsection in which is the wagon of direction, is responsible that the march is performed square

PLATE XXII

H.T. COMPANY IN CLOSE COLUMN.AT HALF INTERVAL.NOTES.

1. The formation shown is the normal for inspections.
2. Two sections only are shown, the remaining sections if any will be formed up similarly in rear.
3. Company Headquarters, Artificers, etc. will be formed up 6 yards behind rear section.
4. Dismounted personnel not allotted to Sections will be 6 yards in rear of the Artificers.
5. Subsection commanders will be on left of the leaders of the right hand vehicle in the subsections.

to the front. In the absence of subsection commanders, the lead driver of the wagon of direction is responsible.

3. *Retiring from line (at full interval.)*

The section will retire, right reverse. March.

At the word "*March*", the whole reverse to the right independently, the officers turning on their own ground, and the whole moving straight to the rear. Subsection commanders will move in line with the leaders of their rear wagons.

4. *Diagonal march in line.*

Right (or left) incline. March.

At the word "*March*", each wagon inclines independently at an angle of 45 degrees in the new direction.

When teams are in front rank, the lead driver of No. 2 wagon dresses on the wheel driver of No. 1 wagon, and so on.

The rear rank cover the front rank and dress in the same way.

If the movement is correctly performed, the shoulder corresponding to the direction named should be behind the centre of the back of the driver next on the inner flank.

Similarly for rear rank drivers, but, in addition, they have their other shoulders in line with the centre of their front rank wheel driver's back.

5. *Changing direction in line.*

Section right wheel. March.

The section wheels to the right, the inner flank bringing round the outer flank. Whether at close or full interval, pace will be checked on the inner and increased on the outer flank.

6. *Advancing in column of route from line.*

Advance in column of route from the right. March.

No. 1 wagon, followed by No. 1 of the rear rank, advances straight to its front, the remaining wagons incline to the right in succession, follow and cover.

From line, at full interval, the remaining front wagons (followed by the rear wagons) wheel at once, follow and cover.

7. *Diminishing or increasing intervals on the move.*

Full interval from No. ..., or close interval on No.

The named wagon continues to advance, the remaining wagons incline outwards or inwards at the trot until the required interval is gained.

In closing and extending, the *remaining* wagons must make their turns so acute that there is no danger of their coming over the alignment (*i.e.* in front of the direction wagon).

8. *Forming line from column of route.*

At ... interval. Front form line.

No. 1 wagon advances 30 yards and halts. The remainder incline to the left, until opposite their places in line at the required interval, when they move forward, halt and dress up on the alignment.

9. *Taking ground to a flank from line at full interval or from column of route.*

Right (or left) take ground. March.

Each wagon wheels through one right angle to its right or left.

125. Company drill

1. A company will normally be drawn up in close column as shown in Plate XXII. A small company may be formed in line if space permits.

2. *Advancing in column of route from close column or from line.*

In succession. Advance in column of route from the right of sections. No. ... Section leading.

The commander of the named section will give the order "No. ... Section. Advance in column of route from the Right—March", and the section will act as in section drill. The remaining section commanders will give the same order, so that their sections gain their correct positions in column of route.

3. *Forming close column from column of route.*

At the halt, form close column at ... interval.

If no interval is mentioned, sections will form line at close interval.

The commander of the leading section will give the order "No. ... Section. At—Interval. Front, Form—Line", and the section will act as in section drill. The remaining sections will be formed to the front by their commanders so that they take up their correct positions.

4. *Forming line from column of route.*

At ... interval, form—line.

The commander of the leading section will give the order "No. ... Section. At—Interval. Front, Form—Line". The commanders of the remaining sections will lead their sections so that the head is in the rear of the point where the right of the section will rest when in line, and will then order "No. ... Section. At—Interval. Front, Form—Line".

CHAPTER VI

ANIMAL TRANSPORT—PACK

126. General principles

1. Of all forms of transport pack transport requires the most unremitting care and closest supervision in order to maintain it in that high state of efficiency without which continuous operations are impossible. Only by close study and constant practice can efficiency be obtained, and continual supervision on the march is necessary if pack convoys are to be employed with any degree of success.

The early detection of a defect will often prevent consequences which might otherwise result in a serious injury.

Injuries to pack animals are mainly due to :—

- i. Badly fitting saddles.
- ii. Wrongly adjusted loads.
- iii. Loads being allowed to remain on the animal for too long a period.

2. Constant training is necessary in packing and loading loads for pack transport and adjusting them so as to ensure security under all conditions of movement.

The essential principles of packing are that the load—

- i. should be as compact as possible ;
- ii. should not exceed the maximum weight ;
- iii. should be roped or secured as tightly as possible so that, when hung on the saddle, it does not touch the animal.

3. *Loading principles.*—The methods of loading and securing pack loads vary with the loads themselves and the class of transport employed, but they are all governed by three essential principles :—

- i. Balance.
- ii. Stability.
- iii. Pressure.

4. *Balance.*—The correct balance of loads is of paramount importance and equality of size of the two packs on one animal is as important as equality of weight. For instance, if a box of ammunition is put on one side of a mule and a roll of blankets on the other, the centre of gravity of the blankets

being further from the animal than that of the ammunition, the larger load will sag and pull the saddle over to one side. For short journeys this difficulty can be surmounted by placing the bulky load higher on the saddle.

5. *Stability*.—The stability of the load must be assured by adjusting it at the right height on the saddle and keeping it in its place with the surcingle. If too high, the load will rock, while, if too low, it will press on the weaker part of the ribs and distress the animal.

An unsteady load will :—

- i. tire the animal ;
- ii. cause galls, even with good saddlery ;
- iii. loosen up knots, even if well tied.

Lashing must be taut and only sound knots should be used ; the motion of the animal strains both continually. Besides being held up in their place, loads must be held down so that a knock on the side cannot lift them off. Loading loosens girths and loose girths are a common cause of galls.

Projecting parts of loads must be so fitted as to avoid injury to the animal, *e.g.* tent poles should be packed so that the pointed ends and greater part of their length are behind the saddle, in order to prevent them from touching the animal's head or neck. No portion of a load should touch the animal.

6. *Pressure* must be properly distributed over the weight-bearing surface of the back, or galls will result ; this distribution is effected by the saddle. With hard, lumpy loads care is needed to prevent a sharp corner pressing on the pannel, as even through good stuffing this will cause a gall. The same may also happen if the girth buckles are fitted too high up the pannels, where the full weight of the load will press them in.

The weight must not be hung low on the pannel, where the ribs are springy and but lightly covered with muscle. The aim is to get the centre of the load on the centre of the pannel or just above it, but it must not be so high as to cause the load to rock with the gait of the animal.

Loads and pace of pack transport are laid down in Appendix V.

127. Lashing

1. Loads may be fixed to the pack saddles in a variety of ways—by ropes or nets, or in panniers or various forms of improvised holders. The ideal way to fix a load to the saddle is by roping, for panniers and holders add to the weight and nets allow loads to shift. The surcingle is only to steady the load.

2. *Ropes*.—Two pairs of baggage ropes are issued with each pack saddle. One pair of ropes consists of two ropes 13 feet 6 inches long connected by a leather strap 18 inches long, each rope ending with a loop covered with leather; a pair weighs 2 lb. 8 oz. Attached to the ropes are two rings, one with which to hang the load on to the saddle, the other with which to secure the loading ring. Pack camels and donkeys are issued with single loading ropes; those for camels are 60 feet long, those for donkeys 40 feet long.

Ropes always stretch, more especially when drying, and must always be drawn as tight as possible, and at each halt all loads must be inspected for loose ropes.

3. *Knots*.—On active service loads should be capable of rapid and simple adjustment under adverse conditions. As far as possible, only knots which can be undone with one pull of the rope should be used.

Anything which has to be lashed in two directions should be made fast independently in one direction before being lashed in the other direction. If this is not done, any slackness in one direction will affect the other.

The following are among the chief knots and hitches likely to be required (Plate XXIII) :—

<i>Thumb-over-hand knot</i>	} for stopping the end of a rope.
<i>Figure-of-eight knot</i>	
<i>Parcel knot</i> , to grip a taut rope when crossing it.	
<i>Reef knot</i>	} for joining two taut ropes.
<i>Draw reef knot</i>	

(Note.—The *granny* knot should be avoided.)

Other useful knots are :—

Single and *double* bends, for joining two slack ropes of unequal thickness.

Blackwall, or *half-hitch*.

Clove hitch and *two half-hitches*, for making fast to hooks, etc.

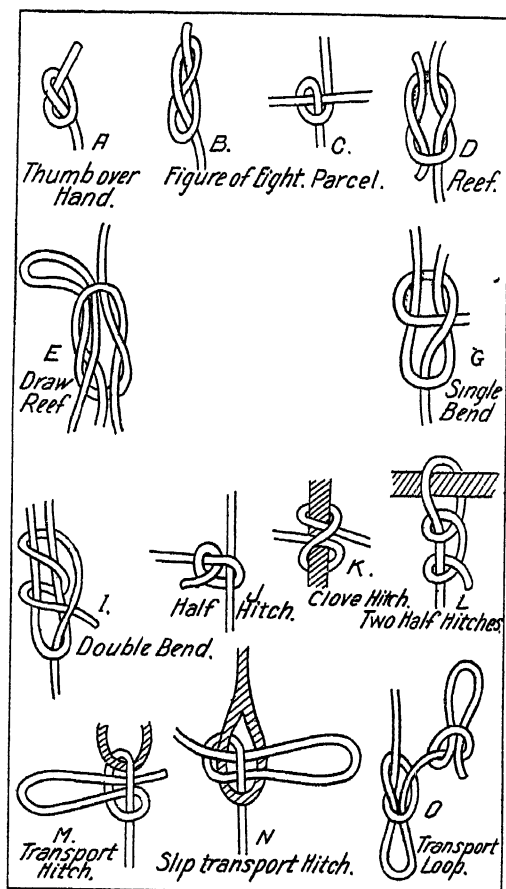
Transport hitch, for making fast to a loop.

Slip transport hitch, for making fast to a small loop (only when quick release is wanted).

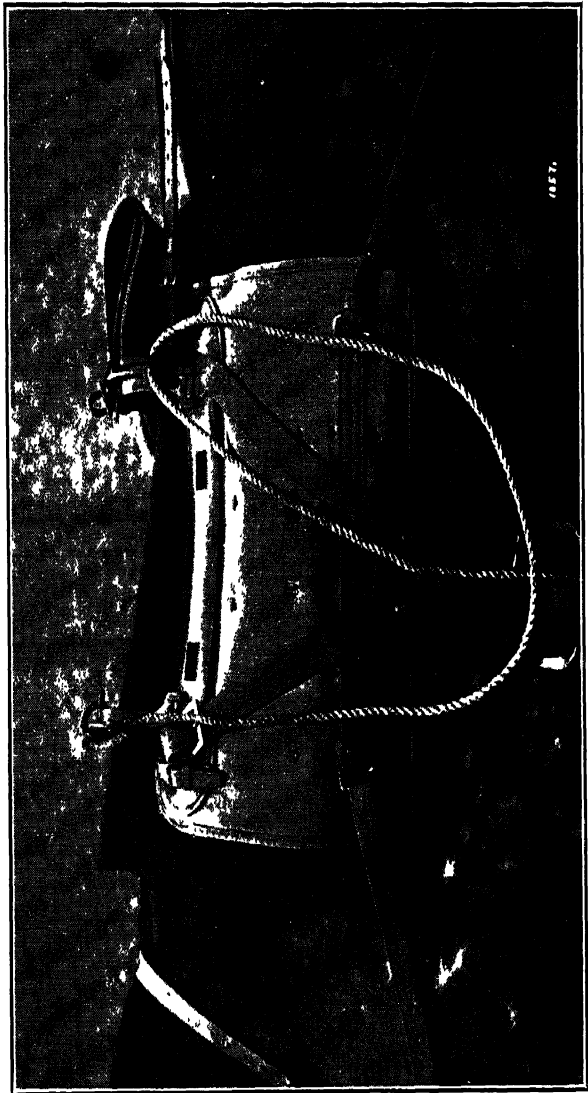
Transport loop, for making a loop on the end of a rope to haul on.

A half-hitch should always be lightly made over the draw loop of a transport hitch to prevent it being accidentally withdrawn. A knowledge of knots is invaluable in recognising efficient work and in the practical demonstration of lashing. Spare ends of ropes should be coiled up and tucked away. The piling up of knots is forbidden; it should always be remembered that the load has to be off-loaded.

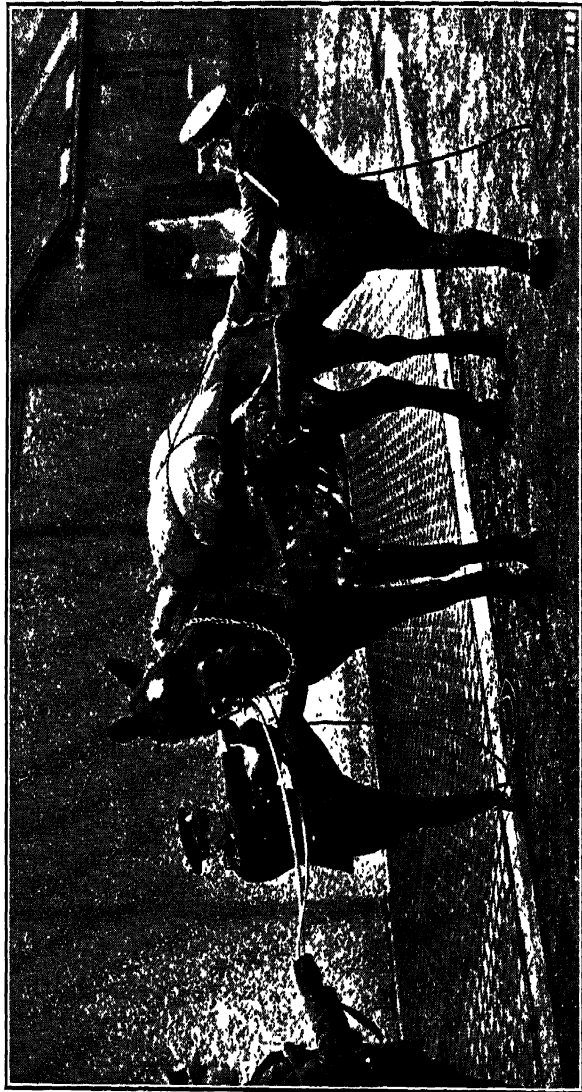
PLATE XXIII



KNOTS AND HITCHES.



BASKET HITCH—FIRST STAGE.



BASKET HITCH—SECOND STAGE.

4. *Methods of lashing loads.*—Loads must be so roped that every opportunity may be taken of short halts for off-loading. From this principle there must be no deviation. The baggage ropes have been so designed that the majority of military loads can be roped, then hung on the saddle and secured by a surcingle. Those loads which cannot be so roped are lashed to the saddle.

Whilst the roping of loads may require considerable skill, it can be carried out on the ground without interference and the loader may turn and twist the load as he wishes. When loads have to be lashed to the saddle, considerably more experience is required, both on the part of the man and the animal. To place two loads on a saddle and fix a surcingle is not a difficult operation, but to lash two loads on to a restive mule with complicated knots is a task of a different order. All ranks should be expert in each method of lashing.

5. *Basket hitch.*—The operation of saddling being completed, a loading rope about 25 feet long and of similar pliability and strength to a baggage rope is doubled at the centre, the loop is passed through the dee of the front arch and the two ends are then passed through the loop and pulled until the slack of the loop is taken up. The ends of the rope are allowed to fall one on either side of the animal.

The packer, taking hold of his half of the loading rope, places a loose loop over the hook on the rear arch of the saddle, the bight of the loop hanging in front of the loose end of the rope (Plate XXIV).

He then places his side load well up on the pannel of the saddle, steadying it with hand or shoulder, placing the bight of the loop round the side load about half-way up and tightening the loop by pulling the loose end of the rope; the loose end of the rope is then brought up and passed over and downwards behind the horizontal rope of the loop, over itself and upwards under the loop again. The ends of the rope may be allowed to hang downwards whilst the side loads are examined and adjusted for pressure and balance (Plate XXV).

The top load, if any, if placed between the side loads and the two ends of the loading rope are passed upwards and joined in a half-hitch above the top load. Both packers now tighten the hitch by pulling the loading rope taut. The taut strain is maintained on the half-hitch until a second half-hitch is made, completing a reef knot.

The loose ends of the loading rope are made fast and the surcingle is put on over all in the usual manner.

6. *Diamond hitch.*—The rope is arranged as for the *basket hitch*.

The packer ties a clove hitch on the front loading hook and again on the back, allowing a loop to hang down between the two. The size of this loop (Plate XXVI) varies according to the size of the load and can only be determined by experience.

The load is now placed in position and the loop brought up round the two lower edges of the load; the head of the loop should reach exactly half-way up the outside of the load. The spare end is next carried over the top two edges of the load, passed through the head of the loop and carried back over the top to the front arch. It is then passed through the front arch from rear to front, the end being drawn tight and passed horizontally round the load through both arches from rear to front and finished with a hitch on the centre of the load (Plates XXVII and XXVIII).

The same process is repeated on the other load and the surcingle is then put on in the usual fashion.

128. Aids to loading

1. *Loading boards*.—A pair of these form useful accessories for long or awkward loads. They can be made easily from $\frac{1}{2}$ -inch boarding—30 inches long and 15 inches deep—with two battens, about three inches deep, and holes top and bottom, by which to attach them. When needed, they are lashed to the saddle with the battens lying down along the pannel on either side. Their object is to widen the saddle and so keep the load away from the animal's head and quarters.

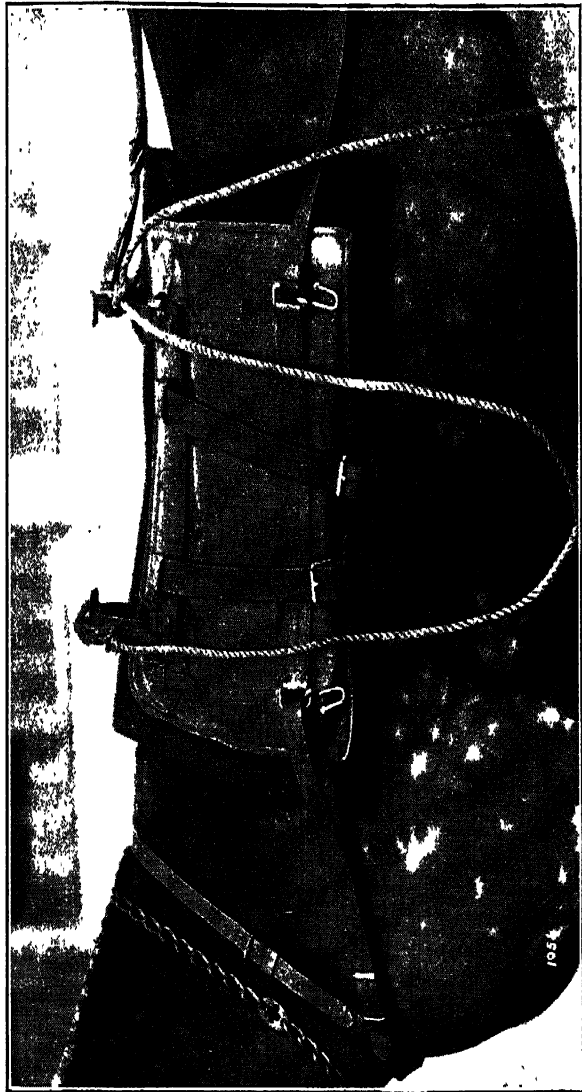
When loading boards are not available, sandbags stuffed with straw and hung on the hooks of the saddle are a fair substitute. Care must be taken that they press only on the pannel and not directly on the mule's side.

2. *Nets*.—The use of nets is to be avoided. They neither fit the load nor hold it steady, yet there are some loads which must be carried in nets—*e.g.* chopped bhoosa—and others which cannot be easily loaded by ropes, *e.g.* cooking pots. An issue of 10 per cent. of nets should be adequate.

3. *Panniers*.—Various types of pannier are provided for the following purposes:—

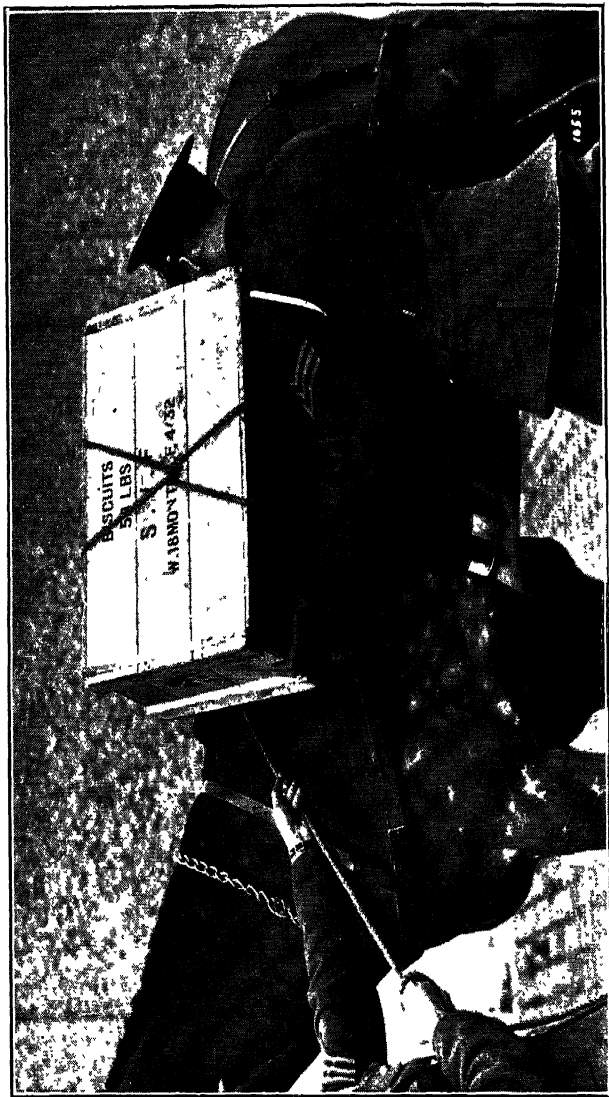
- i. For groceries; these are fitted with wooden bearers at the bottom to admit of the passage of baggage ropes or straps.
- ii. For medical stores.
- iii. For general stores.
- iv. For artificers' tools.
- v. For signalling equipment.
- vi. For petrol cans.
- vii. For engineer and pioneer equipment.

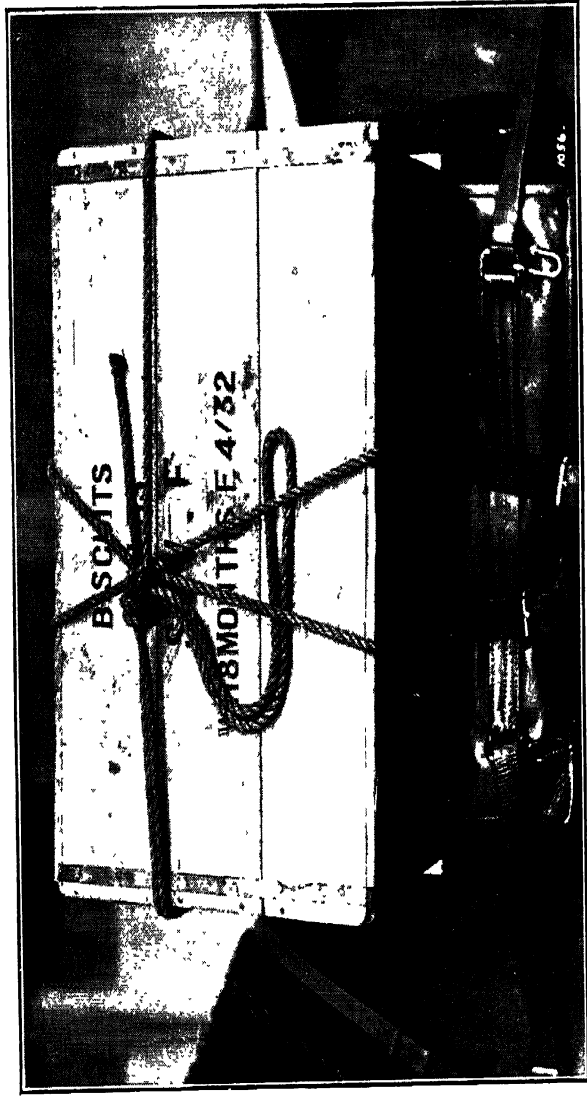
(Note.—In India panniers are called *khajawahs* and *yakdams*.)



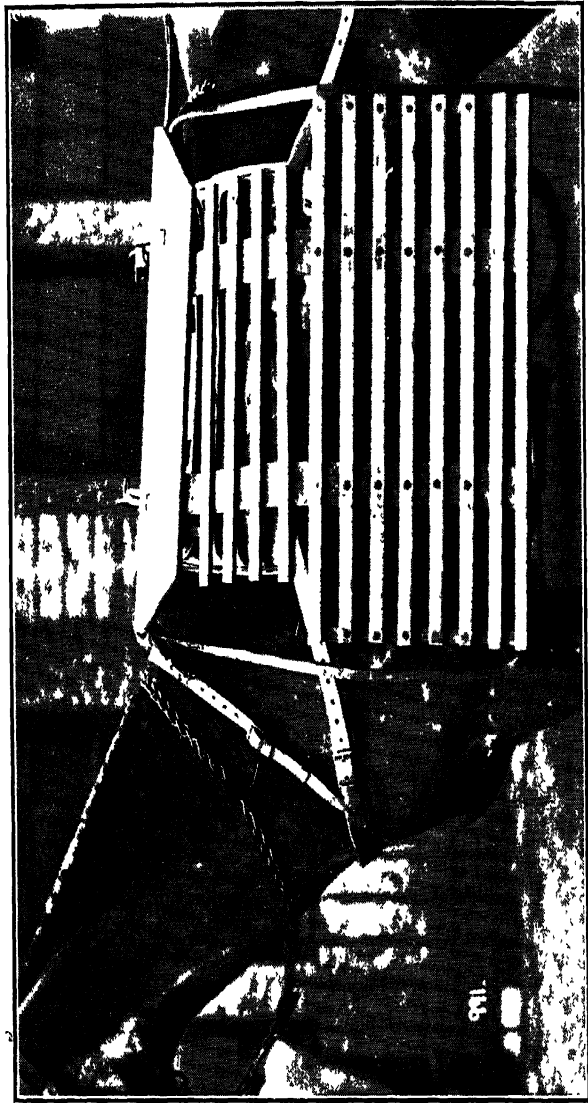
DIAMOND HITCH—I.

PLATE XXVII : [To follow Plate XXVI.





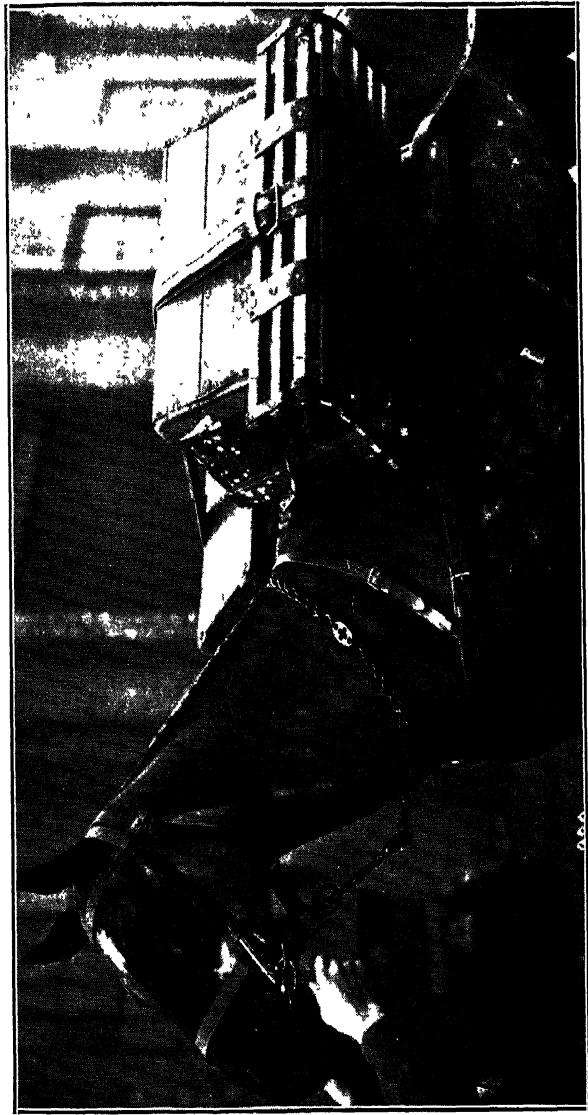
DIAMOND HITCH—III.



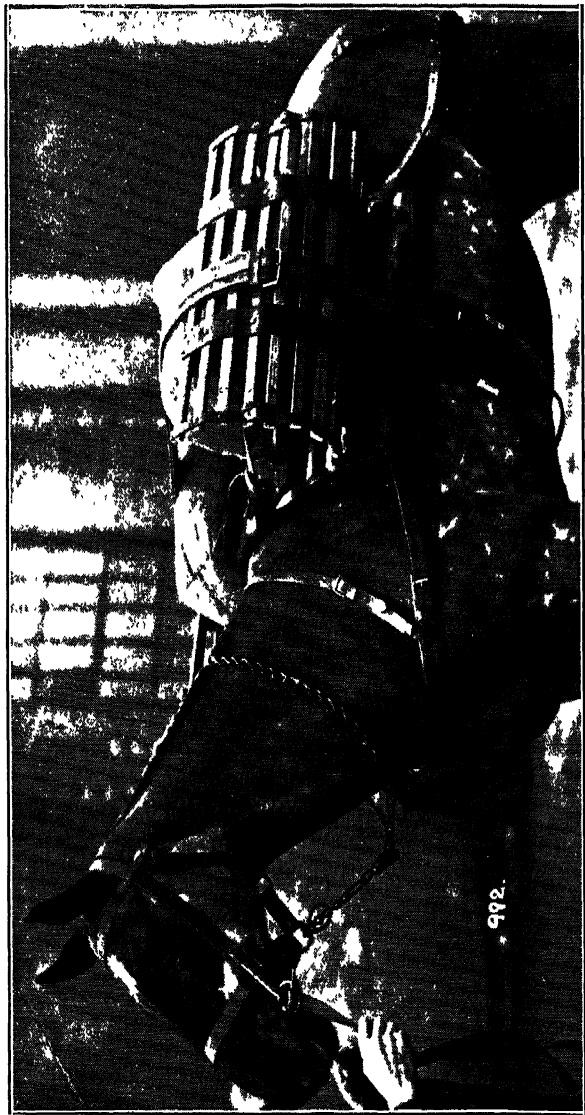
UNIVERSAL CARRIER—NEAR SIDE.

PLATE XXX

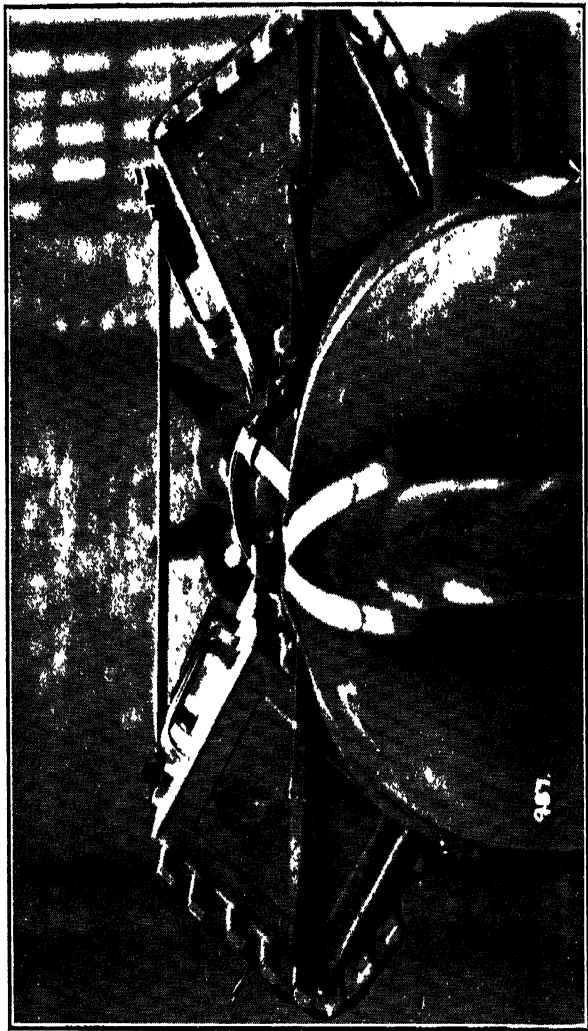
[*To follow Plate XXIX.*]



UNIVERSAL CARRIER—Box Load.



UNIVERSAL CARRIER—SACK LOAD.



UNIVERSAL CARRIER—PETROL CANS.

4. *A travois* consists of a long stretcher, one end of which drags along the ground, the other end being supported and attached to a G.S. pack saddle on a mule's back. The patient is slung on the stretcher; it is a most uncomfortable way of transporting the sick, but is sometimes necessary in rough country. Another form, called a litter, consists of slinging the long stretcher between two mules, one behind the other. This gives a more comfortable ride for the patient, but two mules are required to carry one man, and only quiet and well-trained animals can be used.

5. *Universal carrier* (Plate XXIX).—Some loads are so awkward that they lend themselves to neither roping nor lashing. A universal carrier has been devised in order that the miscellaneous gear of a unit, and other loads which otherwise can only be loaded satisfactorily by exceptionally skilled personnel, may be rapidly loaded and kept steady.

It consists of a number of ash slats 1 inch by $\frac{3}{4}$ inch, evenly spaced and riveted on to two $2\frac{1}{2}$ -inch leather straps. The size is 33 inches long by 30 inches wide. The first four slats form the inner face of the carrier and are only 23 inches long, thus ensuring that neither the hip nor shoulder of the animal is in danger of being galled. The carrier is hooked to the loading hooks by a broad first slat four inches wide. Securing straps are fitted at each end of the first slat. A pair weigh 14 lb. and the principles of stability, balance and pressure are more perfectly exemplified by this device than by many other loads.

Normal loads can be carried without ropes (Plates XXX and XXXI), and awkward loads such as petrol cans can be loaded and carried with rapidity and certainty (Plate XXXII).

129. Horse and mule loads

1. *Loading up*.—The saddle and girths should be inspected before loading. The animals having been filed between the lines of loads, they should be loaded from both sides simultaneously. Should this be impossible, a man will take the weight on the opposite side before loading. Simultaneous loading is the quickest and most satisfactory method.

2. The surcingle is the usual way of steadying the load. The buckle is passed over from the off side and done up on the near side just below the top edge of the near load. (In this position the load and animal are least likely to be disturbed in tightening up.) The surcingle should lie on the girth and must not touch the animal's belly.

A test for sound loading is to trot the animal a short distance.

3. Loads are classified as *top* or *side*.

4. *Top loads* are chiefly found in standardized equipment, such as mountain artillery. In transport work they are rarely used. They are difficult to keep steady, although they have the advantage of being able to pass along very narrow places. Partial top loads can often be used to advantage in conjunction with side loads. By putting part of the load on top, the bulk of the side loads is reduced and the top load so formed holds down and steadies the side loads.

Only light top loads can be carried on the British transport saddle, as the hinging of the side bars makes it very pliable and, the arches being round, it is difficult to make a top load steady.

As an example of a top load (Plate XXXIII), assume that four to six sheets of stiff corrugated iron are to be loaded in addition to side loads :—

To get a steady base and to add to the side grip of the saddle, loading boards should be lashed in the usual way and the two side loads (of about 30 to 60 lb.) lashed fairly low down on the boards. Put an empty jam box resting across the tops of the loading board and lash it down. The sheets should then be put on with the centre of gravity near the rear edge of the box and lashed down in front and rear. After this lashing the lashing of the box will probably need to be tightened up again. The ends of the sheets should be padded to prevent injury to the mule's head or the lashings.

5. *Side loads*.—Side loads are the most usual, and are of the following types :—

- i. Ordinary.
- ii. Short.
- iii. Upright.
- iv. Long.

i. *Ordinary*.—Loads between about 18 and 36 inches long—that is, long enough for baggage ropes to be used in the ordinary way and not so long as to reach to the mule's neck or hips. The best pack mule load is 28 in. \times 14 in. \times 10 in.

This type is roped up taut with the rings at a suitable height and all at the same height. After loading the surcingle is adjusted to hold the load down.

Examples :—

Blankets, G.S.—Load, 32 blankets (Plate XXXIV). Fold in three across their length and roll in four bundles of seven. Put the remaining four blankets in the middle on top, so reducing the bulk and making the waterproof cover

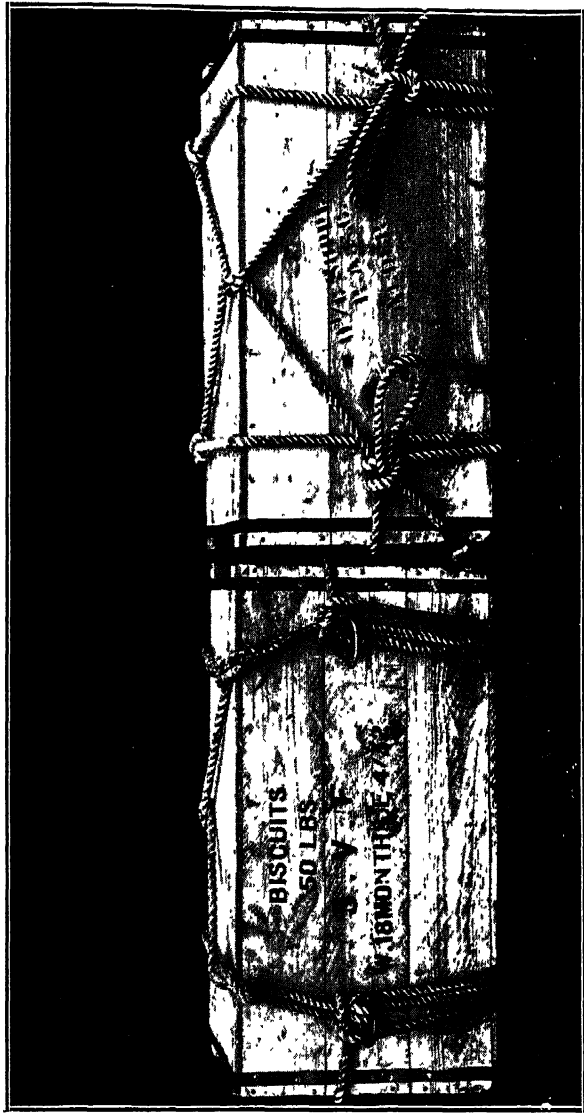


PACK SADDLERY, G.S.—TOP LOAD.

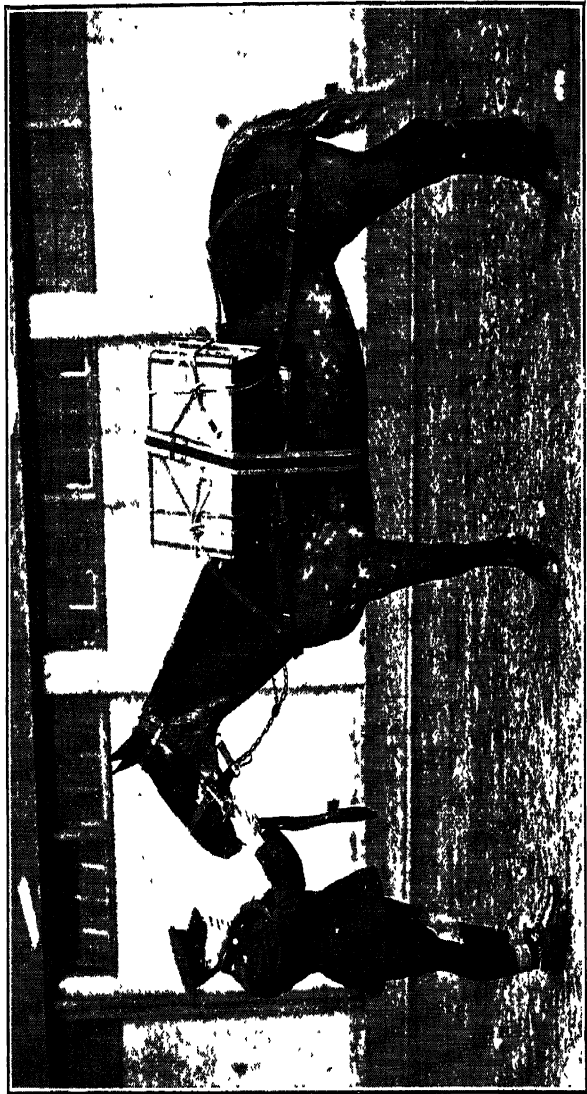
PLATE XXXIV [To follow Plate XXXIII.]



PACK SADDLERY, G.S.—SIDE AND TOP LOAD.



Box Load—Roped



Box Load—Loaded.

sit smoothly. Weight, 70 lb. a side, 20 lb. on top (including allowance for moisture).

Camp kettles.—Load, ten camp kettles and 50 lb. of wood. Fit the camp kettles inside one another and tie them together by the handles, having four lids in front and one in rear. The wood, placed across the top in a sack, will help to steady the load. Weight, 45 lb. a side, 50 lb. on top.

Hand and rifle grenades.—Load, six boxes, two a side with the rings at the top edge and two on top to steady the load; weight, 56 lb. a side and 56 lb. on top. Alternatively, three boxes a side.

Compressed hay.—Load, two bales, one on each side, putting sticks along the edges to prevent the ropes from cutting in and so working loose; the rings should be four inches below the top. Weight, 80 lb. a side.

Sandbags.—Load, two bales of 250. Care is needed to ensure that the ends of the bales do not turn in and touch the mule's hips. (These can also be carried as an *upright* load, using a single rope.) Weight, 100 lb. a side.

Boxes, ammunition, S.A. ball.—Load, two boxes. The rope handles or grummets should not be used for securing the load. Weight, 88 lb. a side maximum.

Ground sheets.—Load, 50, 25 on each side. Weight 94 lb. a side.

Boxes, biscuits.—Load, two boxes (Plates XXXV and XXXVI). Average weight, 74 lb. a side.

ii. *Short.*—Loads less than about 18 inches long—that is so short that the baggage ropes in the ordinary way might slip off; this applies specially to hard smooth loads.

A cradle is arranged by passing a rope horizontally round the middle of the load, meeting at one end of it, and making a thumb-over-hand knot; the running end is passed down under the load and up to the other end and secured there by a parcel knot. The running end is knotted to the standing end over the top of the load. The return of rope which passes over the top of the load is put over the top of the saddle hooks and takes the weight.

Examples :—

Telephone wire.—Load, two drums each of a mile of wire. Nail the wood cross inside to protect the saddle. Put a stop on the top outside to prevent the surcingle from slipping forward. Use one-half of the baggage rope for a cradle. Weight, 80 lb. a side.

Preserved meat boxes.—Load, three boxes, one each side, one across the top. Weight, 56 lb. a side, 56 lb. on top.

iii. *Upright*.—This method is used for sacks and bundles, which are better carried upright between the hooks of the saddle.

Arrange a rope on the hooks on each side as for the basket hitch. Put the load against the pannel, lying between the hooks and inside the original loop. Haul down taut and make a parcel knot, then pass the running end through a transport loop on the running end of the rope on the other side. Haul taut and make fast. The two loads can generally be made to butt together in the middle and then no surcingle is needed.

Examples :—

*Oats.**—Load, two sacks. Form grooves for the rope in the sack. Weight, 82 lb. a side.

iv. *Long*.—Loads from three feet to six feet long.

If loaded in the ordinary way, the mule would not have room to turn his head and would be galled on the hips. A loading board is lashed firmly to the saddle on either side to carry the load further out. Loads are put on high up the boards, tilted up at the front about five feet and with the ends padded with sacking. Firm lashing is needed. Make the load fast first upwards to the hook of the saddle and then, passing the rope down between the loading board and the saddle, make fast downwards.

The centre of gravity will often come near the rear hook, but must not be behind it.

The surcingle will help to steady the load.

Examples :—

Corrugated iron.—Load, ten sheets of flexible corrugated iron (six feet long). Bend the sheets over once longways and tie in bundles of five. Weight, 60 lb. a side.

Screw pickets.—Load, two bundles of ten. Weight, 85 lb. a side.

Angle iron pickets.—Load, eight pickets, four a side. Weight, 76 lb. a side.

* *Alternative method of carrying oat sacks*.—For a march lasting several days oat sacks are better loaded in the following way, the ordinary baggage ropes being used :—

Put the baggage ropes on, crossed on the top of the sack and with the rings three-quarters of the way up it. Make fast with a transport hitch and half-hitch on top. Pass the running ends between the returns of the rope just below the rings and then cross them diagonally round the sack, making parcel knots where they cross the taut returns.

Tie them together on the outside of the sack with a draw reef knot. Make a half-hitch over the draw loop and tuck away the loops and spare ends.

After loading put the surcingle over all.

Trench boards.—Load, four trench boards. Lash in bundles of two. Weight, 70 lb. a side (standard size).

Pit props.—Load, according to dimensions, up to 70 lb. a side.

Light machine gun (Lewis) chests.—Loads, two chests complete. Weight, 83 lb. a side.

Expanded metal.—Load, 18 sheets, nine sheets a side. Fold like flexible corrugated iron and secure with wire. Weight, 81 lb. a side.

Tents, C.S.L., complete.—Load, one a side. Tent poles should be packed so that the pointed ends and greater part of their length are behind the saddle. Weight, 83 lb. 8 oz. a side.

130. Improvisation of pack transport

Pack transport can be improvised from wheeled transport if spare pack saddles are carried by the "off" mules, wheel and lead. Raw hide reins need to be carried, by the use of which the P.D.G.S. breast harness and breeching can be utilized as substitutes for the breast harness and breeching of the G.S. pack saddle. By this means 50 per cent. of a wheel transport convoy could be converted into pack at a moment's notice. The simplest form of improvised pack transport is to sling two sacks over the saddle and fill them with whatever is required to be carried.

MULE PACK TRANSPORT

131. General rules.

1. *Organization.*—Mule pack transport will be organized in companies of five sections of equal strength on similar lines to camel pack transport. (See Sec. 136, 3.)

In addition to the fifth (maintenance) section, 5 per cent. spare animals for each of the four operating sections should be included in the establishment.

The basis of the organization is the *subsection*. A subsection consists of four drivers with the animals committed to their charge. Subsections are grouped into sections of not more than 100 animals. Each section is normally commanded by an officer.

A base depot for the collection and reception of mules and drivers, and the fitting of saddlery and equipment, will also be necessary.

Drivers are normally required on the basis of one for each mule.

The driver and his mule should not be separated unless it

is unavoidable, drivers should be organized in pairs, the pairs always working together for all duties. When native drivers are employed, each driver may be allotted two mules.

The load of a mule should be taken as 160 lb.

2. *March discipline*.—(To be read in conjunction with Field Service Regulations, Vol. II, 1935, Sec. 24, and Manual of Elementary Drill (All Arms), 1935, Chapter VIII).

i. Mule pack transport can traverse practically any type of country (except heavy bush and swamp). Careful reconnaissance of the route is, however, necessary.

As a general rule, it is preferable to move mules at a steady pace, with few halts, than to attempt to hurry them.

ii. *Halts*.—A short halt to adjust loads should be made half an hour after starting.

At all halts loads should be inspected before the drivers are allowed to stand easy.

If the mules graze, care must be taken that they do not work their saddles forward in doing so.

Every opportunity should be taken to off-load and rest the mules.

iii. *Ascents and descents*.—Until the drivers gain experience, a short halt should be ordered to tighten breast pieces for ascents, and breeching and cruppers for descents.

iv. *Bad places*.—The commander should stay to see his unit over, sending on the next senior to choose a rendezvous and collect the mules.

v. *Faulty loads*.—Where a load becomes displaced, the driver should choose a suitable place and pull to one side without checking the unit; the other driver of the pair should also pull out and assist.

3. Further instructions for the care of mules are contained in Animal Management.

4. Intervals are measured between drivers and will be two yards with horses or mules, four yards with camels.

5. Distances are measured from the croup of one animal to the nose of the animal immediately behind it. Normal distances are :—

Between sections in close column	...	...	30 yards
Between sections in column of route	...	...	20 "
Between rear animal of one driver and lead animal of the next	...	...	8 feet

Between lead animals :—

Horses and mules	...	...	...	4 "
Camels	...	...	...	8 "

6. Sections will form in line and will be numbered by subsections from the right. The senior soldier in a subsection will be No. 1 and will be the subsection leader. No. 2 acts as horse holder when required. Nos. 3 and 4 act as loaders, supervised and assisted by the subsection leader.

7. The position of officers, etc., will be similar to those for wagon drill.

132. Section drill

1. *Numbering.*

From the right tell off by subsections.

The men of No. 1 subsection number off 1, 2, 3, 4, from the right. No. 2 subsection numbers in the same way when No. 1 subsection has finished, and so on.

2. *Proving.*

A section will be proved as follows:—

Flanks of subsections—Prove.

As you were.

The flank men of each subsection will act as in the Manual of Elementary Drill (All Arms), 1935, Sec. 20.

3. *Advancing in column of route from line.*

Advance in column of route from the right, Walk—March.

No. 1 of the right-hand subsection advances straight to his front. No. 2 waits until No. 1's last animal has passed, and, inclining to his right, follows and covers. Nos. 3 and 4 act in a similar manner. The remaining subsections march off in the same way in order to gain their position in column of route.

4. *Forming line at the halt from column of route.*

At the halt, on the left, form line.

No. 1 of the leading subsection advances 30 yards and halts. Nos. 2, 3, and 4 incline to their left and halt on reaching the alignment. No. 1 of the next subsection leads his subsection to a point in rear of his position in line and moves forward so as to halt square on the alignment. The remaining numbers act similarly to those of the leading subsection. Subsections in the rear conform to the movement.

5. *Loading from column of route.*

Halt. Prepare to load.

Nos. 2 halt, Nos. 1 advance a sufficient distance to reverse their strings of animals and hand over their lead animals to Nos. 2. Nos. 3 incline to their right and, when in line with their Nos. 2, turn to their left and hand their lead animals to Nos. 2. Nos. 4 incline to their left and turn to their right,

and hand their lead animals to Nos. 2, who stand fast throughout and receive the lead reins from Nos. 1, 3, and 4. Nos. 3 and 4 take out the wanties and girth up. Nos. 1 double out and report to the section commander for orders. This formation is known as the "star" formation (Plate XXXVII).

133. Loading drill—Horses and mules

(*Pack saddlery G.S.*)

1. The subsection leader will be assigned his loads by the section commander, together with instructions for roping or lashing.

2. *Loading with loads already roped.*

i. *Position taken.*—The off side will be loaded first. Nos. 1 and 4 take up position on the off side, No. 3 on the near side. No. 1 will be nearest the head of the animal throughout.

ii. On the signal from No. 1, Nos. 1 and 4 swing the load on the saddle. No. 3 will assist by placing the rings on the loading hooks. When in position, he will say "On". No. 4 now supports the weight on his left shoulder. No. 1 passes round the head of the animal and repeats the process with No. 3. When the load is in position, No. 1 orders "Wantie". No. 4 hands the buckle of the wantie to No. 3 over the neck of the animal and places the straps in position on the load, at the same time running his hand down and under the animal so as to pass the spare end to No. 3. No. 3 receives the buckle from No. 4 and also the spare end, which he will pass through the buckle preparatory to tightening up. The buckle should be just below the top edge of the near load. He tightens up by placing his right shoulder under the load, simultaneously pulling down on the wantie. No. 1 superintends and, when the wantie is sufficiently tight, directs the tongue of the buckle into the hole. On the command "Up" from No. 1, No. 3 releases the strain on the wantie and tucks in the spare end. During this process No. 4 assists the load into the final position by drawing in the tops whilst the wantie is being tightened. When all the animals in the subsection are ready, No. 1 reports "Loaded".

Note.—Care should be taken to place the wantie over the loads in such a manner as to prevent any possibility of their riding forward during movement.

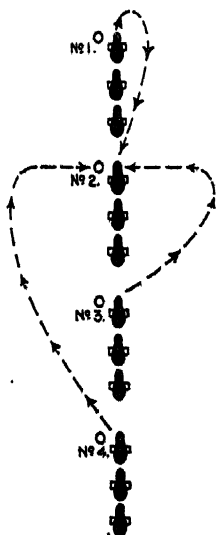
3. *To load by lashing (diamond hitch).*

i. On the command "Prepare to Load", No. 1 reports for orders. Nos. 3 and 4 remove the wantie and tighten girths. No. 4 prepares the lashing by doubling the rope and passing the end up through the "D" of the front arch, then passing

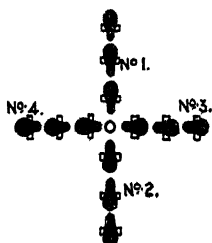
PLATE XXXVII

SHOWING DETAIL OF A SUBSECTION FORMING STAR
FORMATION FROM COLUMN OF ROUTE.

COLUMN OF ROUTE.



STAR FORMATION.



← — — — SHOWS TRACK TAKEN BY
VARIOUS NUMBERS.

the spare ends through the loop and allowing them to fall down on the near and off sides of the animal. Nos. 3 and 4 now tie clove hitches on the front loading hook, and again on the rear loading hook, so as to allow the rope to hang down between the two. The size of this loop will vary with the size of the load and can only be determined by experience. Nos. 3 and 4 now place the loads indicated by No. 1 on either side of the animal to be loaded.

ii. On the command "*Load*", the off side is loaded first. Numbers take up the same positions as in loading with roped loads. On the signal from No. 1, Nos. 1 and 4 swing the load up on the saddle so that the loading hooks bear approximately half-way up the load. No. 1 takes the loop and passes it round the two lower edges of the load. No. 4 takes the spare end of the lashing and passes it through the loop over the two top edges of the load, No. 1 meanwhile supporting the weight. No. 4 throws the spare end over to No. 3. No. 1 ensures that the load remains level. No. 3 passes the spare end through the front arch from rear to front and so to No. 1. No. 3 now takes the weight. No. 1, assisted by No. 4, draws tight. No. 4 takes the spare end and passes it through the top half of the diamond from rear to front, draws tight and passes the spare end to No. 3. No. 1 now takes the weight. No. 3 passes the spare end through the rear and front arches and back to No. 4. No. 4 takes the weight, No. 1 draws tight and finishes off by doubling the spare end, passing it underneath the lashing on the outside of the load from front to rear and making two half-hitches on itself. On the signal from No. 1, Nos. 1 and 3 swing up the near load on the saddle, so that the loading hooks bear approximately half-way up the load. No. 1 takes the loop and passes it under the two lower edges of the load. No. 3 takes the spare end of the lashings and passes it through the loop over the two top edges of the load. No. 3 now passes the spare end to No. 4, who passes it through the front arch from rear to front and so to No. 1. No. 3 assists No. 1 to draw tight. No. 3 now passes the spare end through the top half of the diamond from rear to front, draws tight and passes the spare end to No. 4, who threads it through the rear and front arches and so to No. 1, who finishes off in the same way as on the off side. When finished, he orders "*Wantie*". The wantie is secured as before.

134. Unloading drill—Horses or mules

1. *Unloading roped loads.*

i. **Prepare to unload.**

No. 1 reports for orders, whilst Nos. 3 and 4 remove wanties.

ii. Unload.

The off side will be unloaded first, numbers taking the same positions as for loading. On the signal from No. 1, No. 3 supports the weight whilst Nos. 1 and 4 remove the load and place it clear of the subsection. No. 1 passes round the head of the horse and repeats the process with No. 3. Nos. 3 and 4 put away the wanties and loosen the girths. When the unloading of the subsection is completed, No. 1 reports "*Unloaded*".

2. Unloading lashed loads.**Prepare to unload.**

No. 1 reports for orders. Nos. 3 and 4 remove the wanties and undo the lashings sufficiently so that the loads are ready to be removed. The off side is removed first. No. 3 takes the weight. Nos. 1 and 4 remove the load clear of the subsection. No. 1 passes round the head of the animal and Nos. 1 and 3 remove the near side load. Nos. 3 and 4 make up the lashings and loosen the girth, replacing the wantie.

Note.—In moving without loads, the wantie straps will be folded in four, then doubled and placed between the panel and the girth straps on the near side, above the lay, buckle to the front. Baggage ropes will be rolled and hung on the loading hooks, near and off sides. The lashings will be carried in a similar manner.

3. Advancing in column of route from the "star" formation.**Advance in column of route.**

Nos. 1, 3, and 4 of subsections take over their lead animals from Nos. 2 and advance in succession in column of route.

135. Company drill

Companies will form in close column of sections in line.

1. Advancing in column of route.**Advance in column of route from the right, No. ...****Section leading.**

The commander of the named section gives the command "*No. ... Section, Advance in Column of Route from the Right, Walk—March*", and the section will act as in section drill. The commanders of the remaining sections will march off their sections similarly, in time to gain their correct positions in column of route.

2. Forming column of sections from column of route.**At the halt, form close column.**

The commander of the leading section will give the command "*No. 1 Section, at the Halt, on the Left, Form—Line*"

and the section will act as in section drill. Succeeding sections will act in a similar manner, so as to halt in their correct positions at close column distance.

CAMEL PACK TRANSPORT

136. General rules

1. *Organization.*—Camel transport may be utilized to replace unit first line transport or for all transport purposes.

2. Special war establishments will be issued when resort to camel transport is necessary. The number of camels required should be based on the load carrying capacity of a heavy camel at 350 lb. and a light camel at a maximum of 250 lb.

An allowance should be made for reserves to replace casualties on the basis of 20 per cent. of the total camels to be employed.

One horse as well as one riding camel for every British officer and N.C.O. will be required.

The number of camel drivers required should be based on one driver to two camels.

In addition to the camel drivers various other ranks and grades will be required, such as :—

- i. Chief camel headmen—one for each section of a camel company.
- ii. Camel headmen—on the basis of one to 50 camels.
- iii. Saddlers, guards for day and night duty, medical and veterinary orderlies, etc.

3. The basis of organization of camel transport is the company. For purposes of control and administration companies will be grouped into camel transport units, five companies constituting one unit.

Companies normally consist of approximately 1,500 camels, and are divided into a headquarters and five sections ; four of these are operating sections, the fifth being a maintenance reserve section, which remains with the headquarters of the company and through which replacements to the operating sections are effected.

Each section should be divided into sub-sections of approximately 50 camels each.

The normal system of evacuation of sick and debilitated animals from the operating sections should be by means of the fifth (reserve) section.

This section will be responsible for making arrangements for the further evacuation of such animals to the veterinary hospitals at the advanced base or by rail to the base.

4. In addition to the operating units a camel depot will be required, where camels and drivers can be collected and trained and organized into field units, and reinforcements provided.

At this depot camel drivers will be trained by British and native N.C.O. instructors in the general principles and various methods of loading camels; in the care, management and feeding of these animals, in military discipline and sanitation and in the various routine duties which they are likely to be called upon to perform.

5. *Equipment.*—The saddlery and loading gear may be acquired with the camel, but steps must immediately be taken for the manufacture and provision of new saddlery and loading gear, etc., both for initial issue in equipping newly formed units for maintenance stocks and to replace unserviceable local patterns.

Every camel company should be provided with small suction pumps and canvas troughs, since in the desert small deep wells are frequently found from which camels can only be watered one at a time by bucket and rope, and this is not practicable when camel transport units are on the line of march.

6. *Employment of camel transport.*—Camel transport companies will normally work on the "through" convoy system up to divisional or brigade transfer points, where the loads will be dumped and taken over by the first line transport, which carries out the distribution to the troops.

The radius of action from the supply of water source to the meeting points for each echelon of camel transport should not exceed approximately seven miles.

Immediately this radius of action is exceeded, it will be necessary either to establish additional supply dumps further forward or to interpolate another echelon of camel transport.

It may also be necessary to provide camel pack transport for the carriage of water.

7. *Camels, employed as first line transport.*—Camels require skilled handling, since native drivers are rarely reliable camel-masters. For this reason, when employed for first line transport duties, it is essential that the transport should be retained in organized bodies under its own officers and N.C.Os. whenever possible, rejoining units only when necessary.

When a division is in bivouac, the camels will normally remain the night with their units and be returned to the brigade transport officer at an agreed assembly point on the following morning.

Duty as a first line transport company entails the most

arduous work that camel transport can be called upon to perform, and normally it is necessary to relieve these companies at least every three months.

When camels are employed as first line transport, it is of the utmost importance that the following points should be constantly watched by the British supervising personnel :—

- i. That the watering, feeding and grooming are regular.
- ii. That the camels are not kept loaded for unduly long periods.
- iii. That strict march discipline is observed.
- iv. That the saddlery, loading gear and equipment are properly cared for.
- v. That the camels' backs are regularly inspected for galls or swellings after saddlery is removed.

Every opportunity should be afforded to give regimental transport officers and their personnel instruction in the general principles of camel transport work ; they are then able to assist in the care and management of the camels attached to their units'

8. *Loading*.—Provided that supplies are laid out in long rows by labour before the arrival of the animals, camels can, on arrival, be "barracked" by their drivers, who assist each other in lashing their loads to the saddles. With two camels for each driver it is possible to load 850 to 900 camels in three hours. Camels are "barracked" either in file parallel to the stacks, or in line tail-on to them ; $2\frac{1}{2}$ yards should be allowed for each camel.

9. *March discipline* (see also Field Service Regulations, Vol. II, 1935, Sec. 24, and Manual of Elementary Drill (All Arms), 1935, Chapter VIII).—The following rules are of general application, although modifications may be necessary in some cases to suit the customs of the country :—

- i. Camel transport should march independently of wheeled transport.
- ii. It should march off the road whenever possible, preferably on a broad front ; in this case care is necessary to prevent strings of camels "bunching".
- iii. The slowest and heaviest laden camels should lead.
- iv. The average pace of camels on good ground is $2\frac{1}{2}$ miles an hour. If the march exceeds 15 miles, a long halt should be allowed. 20 miles on good ground is the longest march that can be made without danger of serious casualties from over exertion.

- v. A halt of from five to ten minutes should be made every hour during a march to allow camels to urinate.
 - vi. Loads which work loose or out of place should be immediately adjusted. Any camel showing distress should be immediately unloaded and the load transferred to a spare camel.
 - vii. Burden camels should never be trotted ; they should only be ridden in exceptional circumstances, for which written permission should be given.
 - viii. One day's rest in every three is desirable, if camels are to be kept in good working condition.
 - ix. When meeting or being passed by other transport, camels should be kept on the move, as any checking leads to " bunching " at the rear of the column.
 - x. Halting on difficult ground should not be permitted.
 - xi. Camels will cross fords up to four feet deep if the current is not very swift. They are good swimmers, but will not take to the water unless forced to do so.
 - xii. On arrival in camp, loads should be removed and, when possible, the animals sent to graze. The saddles should not be removed for an hour or so after arrival, as the camels' backs need protection from the sun until they have cooled down.
10. Further instructions for the care of camels are contained in Animal Management.
11. A method of ascertaining the number of camels required for a convoy is given in Appendix VI.

137. Camel loads

1. At the outset of a campaign the loading of camels may be dependent on the ability of the native drivers and their equipment. As a campaign progresses, depots will be formed at which instruction in the use of military equipment will be given, but for a time both the native and the military systems may run side by side.

2. *Lashing.*—The camel loading rope is 40 to 60 feet long. The following methods of roping have proved successful in the field :—

i. *The ammunition tie.*—Put the looped end of the loading rope over the left of the loading bar, pass it under half of the load, then over the top of the load ; loop over the right end of the loading bar, then back under the other half of the load and over. Loop over the left end and straight

across the load to the right and back again to the centre, through the cross loop, and up to the centre of the saddle. Tie to the loading rope of the other side of the saddle, which will keep the load more secure. This tie can be used for any type of load (Plate XXXVIII).

ii. *The double loop* (Plate XXXVIII).—Pass the loading rope round the bottom of the load to the other end, loop round under and over the loading bar, back again under and over the loading bar, then across the centre back again and tie to the loading bar. This tie is excellent for compressed bales.

iii. *The single loop* (Plate XXXIX).—There are two methods :—

(a) Make a loop of fixed length (the end of the loop to reach to the ground) between the two saddle trees, leaving the two ends free. If the load is complex, cross the loop; otherwise leave it simple; put on the load, bring the ends over the load to the sides of the loop, pass through and back to their respective ends of the load and fix to the loading bar. This tie will carry every type of load, but the drivers must be trained to work in pairs for good results.

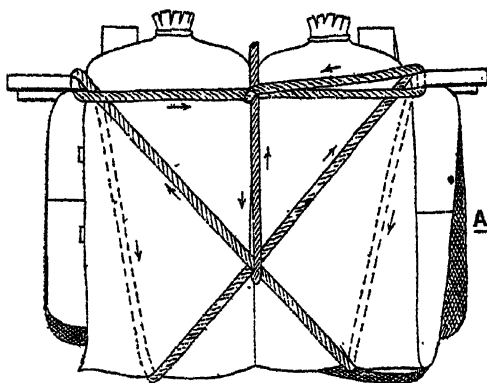
(b) From the end of the loading rope fixed to the end of the loading bar make a loop hanging between the trees; put on the load, bring the loop under and over the load to the centre and run the spare rope through the loop from the front of the loading bar, pull tight over the rear of the loading bar, run back through the loop and tie with a half-hitch to the front. This is a favourite method among Egyptians. Its only fault is that it will not accommodate more than one small package loaded one one side unless the loading is very exact.

3. *Water-carrying fantasses*.—The loading rope is lashed in such a way as to form two loops, each $2\frac{1}{2}$ feet long, hanging on the two side poles outside the front and rear arch. The loop is inserted through the handle of the fantasse, brought up under the side of the pole to which it is lashed and looped with a hitch, if necessary, to the opposite side pole. Time is saved when ropes are thus prepared on the lines previous to marching off, and the system has the following advantages :—

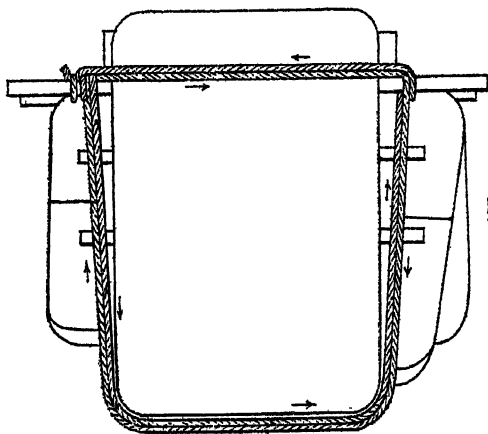
- i. Quick loading and off-loading.
- ii. The certainty that ropes are not lost at night.
- iii. The possibility of using British fatigue parties owing to the simplicity of the operations.

4. *Camel's and driver's gear*.—Lay the camel rugs out flat; on them spread in order the driver's bivouac sheets and

PLATE XXXVIII



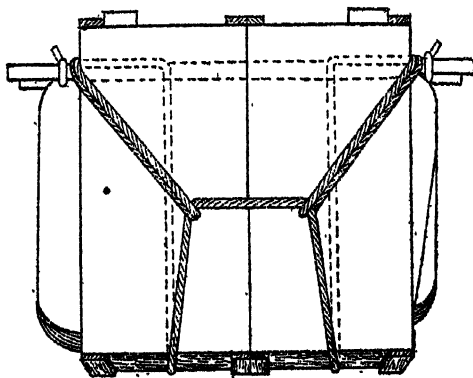
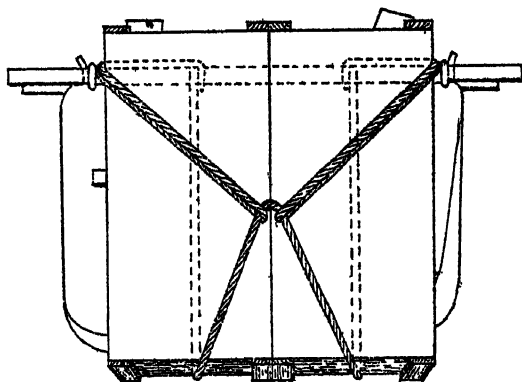
THE
AMMUNITION
TIE.



THE
DOUBLE
LOOP.

CAMEL LOADS—METHODS OF LASHING.

PLATE XXXIX

SINGLE LOOP A.SINGLE LOOP B.

CAMEL LOADS—METHODS OF LASHING.

blankets; fold over once; then place the whole across the top of the saddle, passing beneath the loading ropes and the nets (Plate XL). The driver's kit bag and the camel's reserve ration should be put into position beforehand between the saddle trees and covered by the blankets.

5. *First-line transport*.—It is more difficult to lay down precise rules for first line transport loads. In many cases the British personnel of the units undertake the loading themselves. Generally speaking, when operations are in progress, loads consist of the general impedimenta of an army in the field—ammunition, blankets, bivouac sheets, valises, tents, medical and sanitary stores and cooking utensils.

i. *Blankets*.—The total number for each camel, 75 or thereabouts, should be divided into six lots and rolled thus:—lay out 12 or 13 blankets one on top of the other, then double over to reduce the length to one-half and roll tightly; tie up with three stout ties.

Three such bundles may be roped to each side of the saddle. The two inner rolls must be flat against the saddle and the third on the outside. It is most important that the length of the load should be as short as possible.

ii. *Valises*.—The method described above should be used, but it should not be forgotten that the weight of the valises is deceptive. In case of doubt they should be weighed.

iii. *Tents*.—The maximum for a heavy-burden camel is four C.S.L. or two C.D.L. tents, with poles; if properly packed, they can be loaded by any one of the methods previously illustrated. The tent poles, if in one place, should be tied at the rear to open out the ends on each side of the camel's head.

iv. *Miscellaneous gear*.—Medical, sanitary and cooking gear or stores are often better loaded in nets, with rope support, avoiding excess weight or irregular balance. There are no hard-and-fast rules by which such loads may be satisfactorily secured.

6. *Weights*.—Heavy-burden camels carry 320 to 350 lb. plus their saddle.

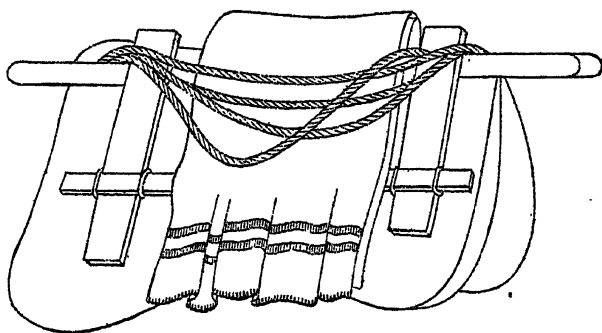
Specimen heavy-burden loads †*

6 cases preserved meat.	4 cases biscuits.
4 „ jam at 80 lb.	2 cheese at 175 lb.
2 chests tea at 140 lb.	6 cases milk
2 cases bacon.	4 „ candles at 94 lb.
4 „ tobacco or cigarettes.	4 bags sugar at 82 lb.
4 bags rice at 80 lb.	4 bales compressed hay.
2 large sacks grain (4 small).	2 fantasses water.

* Light-burden camels carry 200 to 250 lb. plus their saddle.

† In addition each animal carries its own and its driver's kit.

PLATE XL



METHODS OF LOADING CAMEL AND DRIVER'S GEAR.

7. *Methods of laying out supply loads.*—All loads, both first line and convoy, should be laid out beforehand in some convenient form to facilitate loading.

If loads are standardized as far as possible and are methodically laid out at supply depots, there will be very little delay in despatching convoys and fewer resultant sore backs from bad loading.

Loads should be laid out in long lines, taking the maximum number of camels in a line ; camels should then be led in and *barracked* head to head with tails on to the loads ; no camel should leave the line until all are loaded. The same system in off-loading should be observed.

The general arrangement of an initial water point for camel water convoys, accommodating 192 camels, is described in *Military Engineering*, Vol. VI, 1936, Sec. 117.

Freak loads, which are the exception rather than the rule, may cause serious trouble and may have to be dealt with on their merits.

8. *Top loading* consists of placing an extra package, or packages, on the top of the saddle in addition to those on either side of it. Top loading should be discouraged except in cases of extreme urgency. It imposes an extra strain on the arch of the saddle, which is liable to become sprung and, in dropping, causes galled withers.

9. The following table shows some of the main faults in loading and their remedies :—

Nature of fault (1)	Cause (2)	Remedy (3)
Wrong balance ...	i. Difference in weight each side. ii. Loosely tied.	i. Adjust the weight properly. ii. Re-load.
Swaying load (generally bales).	Loosely loaded.	Re-load.
Over-weights ...	i. Military necessity. ii. Carelessness.	i. None, but report the facts. ii. Off-load and reduce.
Broken packages ...	Rough handling.	Should not be accepted.

CHAPTER VII

MOVEMENTS BY LAND AND SEA

Note.—This chapter should be read in conjunction with the Manual of Elementary Drill (All Arms), 1935, Chapter VIII. (See also Field Service Regulations, Vol. II, 1935, Chapter III.)

138. General principles

1. Mobility, which is the result of the power to move rapidly without loss of strength, is an important factor making for success in war. In order to attain this mobility, troops must be trained to march rapidly and far, to move quickly in motor vehicles, to entrain and detrain with the minimum of delay and to travel on board ship with the least loss of efficiency.

2. In order that a unit may arrive at its destination without delay and fit for action, strict march discipline must be enforced; this discipline is only to be obtained by training in peace.

3. The welfare of men, animals and transport must be the constant care of a commander. Only by maintaining all at the highest pitch of fitness and readiness for action can he ensure that the unit will be mobile in war.

4. At the conclusion of a march arrangements must be made to afford the troops the maximum of comfort in accordance with the tactical situation, but full consideration must always be given to the possibility of detection and attack from the air (including gas attack) in selecting or siting every type of quarters.

5. Protection against low-flying hostile aircraft, by the use of small-arm fire, is the responsibility of all subordinate commanders of troops on the move or at the halt, unless orders to the contrary have been issued. Air sentries will be detailed at all times and arrangements made for halting, if on the move, and engaging hostile craft, provided that they are within 600 yards of the point of attack.

During a halt commanders will ensure that men, animals and transport take advantage of the best available cover without disorganizing the column.

MOVEMENTS BY ROAD

139. Marches with horsed and pack transport

1. Before beginning a march, every commander should make certain that the transport equipment of his unit is correct.

Special attention is to be paid to the fitting of saddlery and harness, particularly pack saddlery. The horses must have been properly shod and must be fit for the march. For the prevention and cure of minor leg injuries materials for bandages should be taken; a small supply of numnah and blanket material should be carried so that slight alterations may be made in the fitting of saddles if required.

2. Men, horses and transport should be thoroughly inspected in order to make certain that the men are properly equipped, horses properly saddled and harnessed, transport properly loaded and unauthorized articles not being carried.

3. Horses will often refuse to drink very early in the morning. Unless, therefore, it will be possible to water the horses during the first few hours of the march, a very early start should be avoided when practicable. Arrangements must be made for watering horses in marches of over 15 miles.

4. The length of a day's march will depend on the nature of the unit and force which undertakes it. For a mounted unit 20-25 miles is not too much, and a forced march of 40-50 miles can be undertaken when necessary.

Forced marching, however, will be resorted to only when the expenditure of power thereby entailed is justified by the object to be gained.

For a unit in which some men march on foot the length of the day's march will depend on the distance which these men can go. The horsed transport, if moving by itself, can cover 20-25 miles.

5. For a mounted unit the rate of marching should average about five miles an hour, including short halts. The rate of a march will vary according to the nature of the country, the gradient of the roads and the climate.

6. Strict march discipline is as necessary with transport as with troops and requires constant supervision.

Transport should march in small blocks. The division into blocks will depend on the nature of the transport. A block should rarely consist of more than six horsed vehicles. The space between blocks will be ten yards. Steps must be taken to prevent distance being lost and, if this occurs, it must be regained as soon as opportunity occurs. All trans-

port, both when marching and when halted, must leave sufficient space on the outer flank for the free movement of passing traffic. Pack animals will not be loaded until shortly before they are required to move off and, in the case of horses or mules, will be unloaded at a halt, if possible.

7. Troops should usually walk or lead when going up or down hill and trot when the ground is level. Except when tactical considerations preclude opening out, each leader should change the pace of his unit at the point on the road where the unit in front changed its pace. In order to allow the horses to cool, the last two miles or so of the day's march should be traversed at a walk.

8. For a dismounted unit the rate of marching will be that of the column in which it is moving and will usually average $2\frac{1}{2}$ miles an hour. Horsed transport moving without marching troops will usually average more than this.

9. In all circumstances an even pace should be maintained throughout a column, in order that the fatigue caused by repeated increases of pace and by sudden checks may be avoided. The leading unit should not, unless specially ordered to do so, move faster than the normal rate.

Broken-down wagons, disabled animals or thrown loads must at once be removed from the roadway, so that the transport in rear may not be checked.

Animals must not be allowed to drink when passing fords unless an organized halt has been arranged for this purpose, nor will drivers be allowed to halt without special permission.

10. In the vicinity of the enemy tactical considerations will govern the rate of marching and the number of halts.

11. Subordinate commanders must be vigilant to notice all signals or words of command, and to pass them quickly and accurately down the column. When a check is unavoidable it should be anticipated by halting the unit until it is possible to march forward again at the normal pace.

140. Swimming and crossing rivers

1. The selection of the site for a crossing is a matter of great importance. The entrance to and exit from the water must be good, particularly the exit.

The ideal is a gravel bottom with an even slope out of four feet of water, extending for a width of not less than ten yards. A muddy bottom very quickly becomes so heavy that the horses may not be able to struggle out, and the width of the exit must not be so narrow that one horse in difficulties can prevent or frighten others from landing.

2. Training should chiefly be concentrated on teaching the men to swim well; a bad swimmer will usually seriously impede the efforts of even the most willing horse. Nearly all horses are willing to swim if accompanied by a good swimmer, even though he be unaccustomed to horses.

3. All horses should be taught to cross a running stream. Those which at first refuse must either be led beside a horse which swims boldly or be towed across from a boat or raft, a tow rope being employed, so that nervous horses may keep away from the oars.

In teaching horses to cross a river, every care must be taken not to frighten them. All horses swim naturally and it is only through fear that they sometimes become unmanageable.

4. When all the horses of a squadron have learnt to cross, the whole squadron may be sent across in a mob, led by a few steady horses with their riders.

Instead of moving all the horses away immediately they land, it is advisable to keep a few at the landing place to attract those which are to cross later.

5. When a large number of horses must cross at one place or when the natural approach and exit are bad, the endless rope method is the most effective, provided that there is a reasonable current to keep the horses clear of the rope.

A party of about 60 men plus horse-holders are required. The rope, after being passed across, must be tensioned up to keep it clear of the water and, when hauled, should move rather faster than the horses can swim. Some horses are then attached to it by their head-ropes, with a distance of about five yards between horses, and hauling begins. On the landing side horses are detached from the rope as they come ashore, and on the departure side more are attached to the rope in succession.

It is important to keep the rope moving. To ensure that horses can be untied promptly after they come ashore, the head-ropes must be secured with a quick release knot such as a clove hitch tied with the free end doubled in a loop and pushed back through the clove part of the hitch. In case any knot does not come untied at once, a man with a sharp knife must be ready to cut the head-rope instantly. If this is not done, the rope must be stopped moving with the risk of confusion and the possible drowning of horses.

A rope and tackle for rigging it are carried by the field troop.

6. For the passage of rivers, rafts of suitable size can be constructed to carry a few horses each, but it is rarely worth the expenditure of labour, time or materials to do this. It is

preferable to use small rafts or boats to carry the men, their arms, equipment and saddlery and to make the horses swim ; or to carry the arms, equipment and saddlery only, the men swimming with their horses.

7. Before a squadron crosses a river, a party should, if necessary, be detailed to prepare the banks. When the current is swift, a supplementary landing-place should usually be prepared about 200 yards down stream, in case any horse gets carried down and is unable to climb the bank.

8. All saddlery except the head collar and cheek reins will be removed and secured in the saddle blanket. The head-rope will be tied round the horse's neck close to the withers and detached from the head collar. Indifferent swimmers, or men who cannot swim, will load and man boats, or make rafts and ferry the saddlery across. The remainder, having stripped, will pack their clothing with their saddlery.

9. Before the water is entered, the reins should be taken over the horse's head, put through the throat lash, then taken over the horse's head again and knotted so as to prevent them from becoming entangled.

10. Horses, led by four others selected for steadiness, cross in sections extended, and at ten yards distance. Men, as the horses get into deep water, should slip off on the down stream side, holding on to the horses by the mane or head-rope, and should lie along the top of the water as much as possible, guiding the horses by splashing or by pulling the cheek rein. The rein should be grasped close to the bit and pulled sideways in the required direction, not backwards. A backward pull is liable to make the horse throw up his head and turn over. The reins should be let go at the earliest possible moment.

If a horse shows no disinclination to cross, the rider should leave him perfectly free and may catch hold of his tail instead of his mane or head-rope. On reaching the landing place loose horses should be caught by men specially detailed for the purpose.

When there is a strong current, horses should be kept at an angle of about 45 degrees against the direction of the stream, to avoid being carried too far down.

11. When opposition is anticipated, a squadron should normally cross a river in the following sequence :—

- i. Dismounted covering party.
- ii. Mounted reconnoitring patrols.
- iii. Fighting force for establishing a bridgehead.
- iv. Remainder of the squadron.
- v. Transport.

12. In practising horses in crossing temporary bridges they should first be led across in single file at a horse-length distance from each other. Horses which are unsteady should be led across by themselves, backwards and forwards several times in succession, a lead being given to them by a steady horse. When the horses can be led with perfect steadiness across the bridge in single file, they should be ridden across first in single file and then in half section.

A sprinkling of sand or some straw laid on the plank deadens noise and prevents slipping.

As it is essential that no check should occur during the passage of horses over a pontoon bridge, it may be as well to station a few dismounted N.C.Os. along the bridge, who can assist, when required, in keeping horses on the move.

MOVEMENTS BY RAILWAY

141. General instructions

1. Rules, applicable in war as well as in peace, for the movement of troops by railway are given in King's Regulations. The accommodation provided by railways in the theatre of operation may differ from that in the British Isles. The composition of trains varies according to the gradients, types of locomotives and other technical considerations. Consequently adjustments may be necessary in the numbers of men, animals or vehicles which can be carried in one compartment or truck. The responsibility for entraining and detraining a unit rests with its commander.

The operations must be carried out systematically, under the orders of the commander, who will be in close touch with the railway transport officer. Careful arrangements, executed with quietness and rapidity, are necessary, particularly at night.

2. In order to ensure rapid entrainment, reconnaissance is essential to see that the necessary accommodation is available and that the loading facilities are adequate. Units must be brought to the siding in the most convenient formation for entraining and arrangements made to keep all loading parties and appliances fully employed.

3. Timely arrangements must be made for the issue of rations and forage for consumption on the journey. It may also be necessary to arrange for cooking facilities in the trains.

4. Horses should be watered before entrainment, and, if possible, on long journeys, they should be taken out of a train at least every 24 hours, walked about and allowed to roll on sand or grass.

5. If inflammable stores are carried, care must be taken to guard against the risk of fire, particularly in regard to sparks from the engine. Such stores, if carried in open trucks, should be placed at the rear of the train.

6. Arrangements should be made for adequate lighting at the station, when the tactical situation permits, in order to expedite the entrainment or detrainment.

142. Moving horses by train

1. The entrainment of horses will be carried out in accordance with the instructions given in King's Regulations. These instructions are generally applicable to detraining also.

Horses should normally remain saddled, unless special orders to the contrary are received. Special attention must be paid to head ropes before entrainment, to see that they are serviceable.

2. The floors of trucks used for the conveyance of horses should be at least $1\frac{1}{2}$ inches thick. Cinders, sand or gravel should be sprinkled on them to prevent the horses slipping; on no account should straw or any inflammable material be used for this purpose.

3. The force to be entrained should be told off in groups according to the number of horses to be loaded in each truck. When there is sufficient room, each group should be formed up in single rank at right angles to its allotted truck; when sufficient space is not available, each group should be formed facing its truck. The men then put down their kits. If they have formed at right angles to the train, the kits will be in front of the horses, and, if facing the train, the kits will be in rear. When horses are to be entrained saddled, bits and nosebags should be removed; in taking the sword off, the shoe case should also be removed.

4. The entrainment should be carried out without noise or violence, so that the horses do not become excited or obstinate. The first horse to enter a truck should be the quietest available and should be led quietly with a loose rope as if being taken into a stall and without the man looking round at the horse. The remainder should follow immediately, troublesome horses being kept to the last. If possible, kicking horses should be at the ends of the truck. The horses should be led alternately into the back and front ends of the truck and secured by head ropes to the truck rails.

5. To save time in dealing with a jibbing horse, two men must be ready, one on each side, to clasp hands above his hocks and hustle him into the truck. Care must be taken to

see that the horse does not get a leg down between the truck and the loading platform ; this can usually be prevented by holding the truck doors at right angles to the truck.

In the case of a really bad jibber the following method may be adopted :—

One end of a piece of soft rope, not less than three inches in diameter, from eight to ten yards long, is passed through the head collar, inside the near fore leg and over the withers. It is then passed back inside the off fore leg and made fast to the head collar. The other end of the rope is taken through the truck underneath the lowest bar and on to the line. Four men now haul on this rope and with a little assistance from behind the worst jibber may be loaded.

6. After horses are loaded, men fall in by their arms and are told off in groups according to the accommodation of the compartments. They are then marched to their carriages and entrain.

7. Men will detrain with their arms and kits. If the unit is going to embark, they will march straight on board to stow their kits before taking the horses out of the train ; if not, they will place their kits in line outside their horse trucks and begin detraining at once.

143. Moving vehicles by train

1. The following are the three methods most commonly employed in entraining vehicles :—

Side-loading.

End-loading.

Loading by crane.

i. *Side-loading*.—The advantage of this method is that many vehicles can be loaded at the same time if there are ramps and loading parties available, but the difficulties of manœuvring loaded vehicles render the method slow and dangerous.

ii. *End-loading*.—This is the normal method where end-loading platforms are available. It is rendered much easier when the siding is straight. Shunting is usually necessary to load up all the vehicles in this manner.

In all cases of end-loading planks or sleepers are necessary to bridge the space between trucks, which must have their brakes hard on, and, with heavy vehicles, trucks must be shored up beneath the buffers with sleepers or skidding to prevent

tipping. It may also be necessary to scotch the truck-wheels.

Vehicles are driven on to the train under their own power, care being taken to remove any of the superstructure which fouls the loading-gauge.

The precautions against fire prescribed by the railway authorities must be complied with as regards the petrol in the tanks of motor vehicles.

- iii. *Loading by crane.*—Where a powerful crane exists, the loading of heavy vehicles on to trucks presents little difficulty. The method of slinging vehicles is similar to that employed for embarkation purposes.

2. The general points which should be attended to in the loading of vehicles are :—

All poles must be inspected before arrival at the station to see that they can be easily removed. This will save delay in entraining.

Care must be taken as to the safe disposal of pole pins, bars supporting pole and swingletrees where they will be readily accessible at the end of the journey.

The load must be evenly distributed over the floor and, if any of the flooring planks are rotten, a sleeper must be put across them under the wheels. The minimum thickness of the floor should be two inches.

The points of poles must not stick up so that they would strike against bridges, etc., as would usually occur if they were more than eight feet above the floor of the trucks.

The wheels of vehicles nearest to the ends of the trucks must be securely lashed by a rope to the false buffers or to rings; the rope is also given a turn round the axle of each pair of wheels on the truck to prevent them shifting with the jerks of the train. The wheels of heavy vehicles require also wooden scotches nailed to the floor of the truck.

Generally, the best way to stow L.G.S. wagons is poles and perches resting on the floor, poles to the front and perches to the rear, the wheels of each vehicle inter-locking with those of the carriage in front of it.

MOVEMENTS BY SEA

144. General considerations regarding animals

1. Horses will, unless they are to be slung on board, be watered before going on board and given long hay as soon as they are tied up in the pens. (Sec. 145, 5.)

2. Before embarkation begins, it should be ascertained that the way to the furthest stall is quite clear and that the brows and docks afford secure foothold. Foothold may be improved by coir mats, straw or sand, but the battens on the brows will not be covered. Coir mats should be securely fastened, for, if loose, they slip under the feet. Ship's halters will be laid out at the ship side.

3. The men, after detraining, will proceed on board and stow their arms and kits. A party will then be detailed to proceed to the pens to receive the animals. The remainder of the men will return to the train and unsaddle the horses, fasten the nosebags round the horses' necks and put on the ship's halters.

4. Saddlery, head collars, bridoons and head ropes will be stowed in sacks, which must be brought by the unit for this purpose.

5. A supply of empty corn sacks will be placed on board, as these, when stuffed with hay, make excellent pads for the protection of impaired and exhausted horses.

145. Embarkation of horses

USING HORSE-BROWS (GANGWAYS)

1. Horses should be led along the horse-brow by the head rope, the man walking in front and holding the rope at its full length.

2. When horses are being led on board, it is most important that they should follow each other up the brow in unbroken procession, in such order that those which stand together in stables may be neighbours on the ship. If a horse jibs at the brow entrance, he should be taken away and formed up again in the procession a few places back. If he again refuses to enter the brow, a breeching, with rope hauls attached, should quickly be brought into play. Men must not face their horses when leading them up (or down) the brows.

3. If the brow is at a steep downward angle, the horses should be sent down with head rope loosely knotted round the neck and should be caught by men at the bottom of the brow.

SLINGING HORSES FROM A WHARF

4. Normally horses will be embarked by slinging only under the orders of the veterinary officer.

5. Horses must not be watered or fed for two hours previous to being slung, but this should be done as soon as they are on board.

6. Slings should be minutely inspected before the embarkation begins. A double guy should be made fast to each horse's head, one end being held on shore and the other on board, in order to keep the head steady.

7. In slinging horses, five men are required, one at the head, one at each side, one at the breast and one behind. One end of the sling is passed under the horse's belly and both ends are brought up to meet over his back; one man passes his loop through the other loop and it is received by the man on the other side, who hauls it through, hooking the tackle to it, both men holding up the ends of the sling until it is taut. The men at the breast and behind bring their ropes round and make them fast to the grummets, and the man who holds the horse's head makes fast the guys to the ship's halter. The breech band and breast girth must be securely fastened and drawn as tight as possible, the breech band being kept below the swell of the buttocks. Timid or restive horses should be blindfolded.

8. When all is ready, the command "*Hoist away*" will be given and the horse will be rapidly run up from the ground to the necessary height and then carefully lowered down to the hatchway. The command to "*Hoist away*" should be given only by the officer in charge, for much damage may be done if the command is given prematurely. Two or three men should be stationed at the hatchway and between decks to guide the horse in being lowered. A soft bed of coir mats must be provided for the horse to land on and the men stationed in the lower deck must be ready to receive him and take off the sling, as, on first feeling his legs, he is apt to plunge and kick violently unless firmly handled.

USING SHORE BOATS

9. The method of embarking horses in boats or flats will vary according to circumstances. If the boats can come alongside a wharf, or can approach close to an open beach, the horses can either be led on board by gangways or be slung in the manner described above, sheers or a derrick being erected. When the boats cannot come sufficiently near the shore to enable horses to be hoisted on to them, piers or platforms must be constructed. The piers should always be provided with stout side railings at least 4 feet 6 inches high and the floor covered with straw or sand to prevent the horses slipping.

10. When embarking in boats, the detachment should be formed up opposite them and the same rules, so far as practicable, followed as when embarking in vessels alongside

a wharf. A man must be told off to each horse and take with him in the boat the whole of his kit, equipment, saddlery, etc. The men should take off arms, belts and spurs. The horses should, if possible, be placed alternately athwart the boat, head to tail. Each man must hold his horse until the vessel is reached. Sand or straw should be put in the boats to prevent the horses slipping.

BY SWIMMING

11. In the absence of boats and appliances the following method of embarking horses by swimming may be employed :—

The horses, having been halted a short distance from and out of sight of, the point of embarkation, are stripped of all appointments except the bit and headstall, which latter should be close fitting.

A horse having been led to the landing place, two men prepare him for the water. No. 1 holds his head. No. 2 places the sling in position and secures the straps with yarn, so as to prevent the sling opening in the water ; he then fastens the breast rope and breeching securely. A rope of about eight yards in length, with an eye at one end, is next passed round the neck and fastened rather tightly by an overhand knot, so as to prevent its becoming either looser or tighter. The bit is then taken off and, to support the horse in the water, another rope is attached to the lower ring of the headstall under the chin, or else a short rope is passed round the girth in front of the sling and close behind the elbows, the ends being brought up and fastened over the withers. The horse is controlled altogether by the neck rope.

The horse is then led into the water as far as he will walk towards the boat, in the stern of which should be a man, who receives the neck rope in his right hand and immediately reeves it through the stern ring of the boat to secure additional power in the event of the horse plunging ; the headstall or girth rope he receives in his left hand.

When once the horse is swimming, the neck rope should be hauled close up while the headstall or girth rope gently supports him in the water.

A small rowing boat with two oars will be sufficient. It should not be pulled too fast, or the horse will make no attempt to swim.

On reaching the ship's side, the hook and tackle should be lowered, the hook passed through the sling's eye and the horse hoisted up on board.

Care should be taken to arrange the tackle so that the horse, in being hoisted in, is kept clear of the ship's side.

146. Disembarkation of horses

1. If possible, on disembarkation, which should follow the lines laid down for embarkation, everything belonging to man and horse will be taken out of the ship before the animals are landed, as the men need not then quit their horses after disembarkation.

The ordinary headstall and bridoon will be put on before horses are disembarked. When horses are to be disembarked by slinging, the ship's halter will also be kept on until the horses are on shore.

2. Straw or sand should be laid on the wharf for the reception of the horses. Horses are apt to fall on their knees at once unless carefully held up.

3. Horses may, in cases of emergency only, be disembarked by swimming. When this method is adopted, the horse should be lowered in the sling over the side of the vessel without fastening the breast rope or breeching. When the tackle is unhooked, the sling opens and is at once slipped from under the horse. The neck rope should be hauled up and secured and the horse supported as explained above. If necessary, four horses may be made to swim ashore at a time, two on each side of the boat. It is important that horses should be kept at the point to which the others are to swim.

Horses should be cool before being put into the water.

147. Movement of vehicles by sea

1. *General.*—The actual shipment, stowage, etc., of vehicles will usually be carried out under the supervision or direction of a representative of the Board of Trade and, in war, the unit may be relieved of any responsibility in connection with the loading or unloading of its vehicles.

2. For slinging guns, limbers and limbered wagons the following method has been found to give good results:—

Two 4-inch slings are used, one round each axletree, and a hook rope hooked into the trail eye. The bights of the slings are placed on the tackle hook, to which the end of the hook rope is also made fast.

Limbers are slung in the same way as guns, the hook rope in their case being made fast to about the centre of the pole, unless special instructions to remove the poles are issued.

Limbered wagons will, as a rule, be embarked loaded on their wheels; the poles should not be removed before slinging. If the wheels are removed, special care must be taken that the linch pins and washers are put away. Those

carriages first required on disembarkation should be stowed away last.

3. G.S. wagons can be slung by four chains connected to a common link at the one end and provided with hooks at the other; these four hooks are then secured to all four wheels of the vehicle. The poles must be removed before slinging and made fast to the body of the wagons, particular attention must be paid to the careful stowage of pole pins and swingletrees.

If cordage only is available, two slings, each consisting of one rope three inches by 60 feet, knotted at a suitable length, and two lashings, $1\frac{1}{2}$ inches by 30 feet, for guy ropes are required.

To adjust the front sling, pass one end inside the wheels and under the futchels of the fore carriage in front of the axle. To adjust the back sling, loop one end of the sling over the nave of the off hind wheel. Pass the sling over the load and loop the other end to the nave of the near hind wheel. Care must be taken to see that the drag washers are turned down to prevent the sling from slipping off.

The hook of the hoisting tackle is then passed through the end of the two ends of the front sling and under the centre of the back sling.

The pressure can be taken off the sides of the carriage by making use of loops made with pole-chains or ropes at the end of poles, through which the slings are passed.

APPENDIX I

GUIDE TO THE CONDUCT OF RIDING LESSONS

I. GENERAL CONSIDERATIONS

1. The following lessons provide a framework on which the officers and N.C.Os. of the regimental equitation staff can build up and prepare their instruction during the various stages of the recruits' course of riding. They should be taken as a guide only, and are not necessarily to be delivered as "set-pieces", although they form useful first lessons in the subjects with which they deal and contain all the elementary points necessary to be taught in these lessons.

2. The lessons are based on the following general principles, which should be attended to by every instructor when giving these or making up similar lessons :—

- i. The instructor places himself and the class in the most advantageous position to hear his explanation and see his demonstration.
- ii. He gives a short explanation of the exercise and its objects.
- iii. He demonstrates the correct method of doing it.
- iv. He explains how to do it, stage by stage, giving detail.
- v. He demonstrates again the correct method.
- vi. The class carry out the exercise.
- vii. He demonstrates and corrects faults in individuals as they occur.

3. The instructor should take care that his explanations are as short and simple as possible and that his demonstration is only long enough for every man in the class to see it clearly and take it in. He should aim at getting his class on the move and making them carry out the exercise as soon as possible.

4. The instructor should be mounted on a well-trained horse on which he can give his demonstrations and explanations without having to concentrate his thoughts on the horse.

The class should be mounted on quiet horses and, as they advance in their training, the importance of being mounted on horses which obey the correct aids readily becomes greater.

The best schoolmaster for the recruit in the riding school is a well-trained horse.

II. FIRST FOUR LESSONS TO RECRUITS

The following are suggested as the first four riding lessons for recruits who have had no instruction on the dummy horse and who have never ridden before.

These first four lessons should be taken on consecutive days if possible.

1st Lesson.—The instructor must be as quiet as possible and avoid any semblance of bullying or nagging. He must try to gain the confidence of his class and interest them from the first in their horses and work. The recruits should be mounted on very quiet trained horses and it will save much time and talk if three or four old soldiers can be used as assistants to the instructor for the first lesson.

1. Show how to lead in hand.
2. On arrival at the riding school, show the rough method of fitting stirrups and make the class do it. At this point caution the recruits against taking liberties with their horses' heels. Make them always go round the front of their horses when fitting stirrups, etc.
3. Show the class how to mount with stirrups, without any detail, and get them mounted.
4. Show the class how to turn in the track and make them do it.
5. Show them how to get the horse to walk forward and make them walk off round the track.
6. Whilst on the move, explain and show them how to halt. (N.B.—This distracts their attention from the fear of the horse.)
7. Having walked round the school a few times, show them how to dismount without stirrups and make them do it.

(In units where dummy horses are available for instruction, 2, 3 and 7 can be taught on them.)

2nd Lesson.—(For this and subsequent lessons an old soldier should be used, if possible, to lead the ride.)

Repetition of the above and in addition:—

1. Show how to turn in from the halt.
2. Show how to stand to horses. (This would be taught first on dummy horses, if available.)

3rd Lesson.—Repetition of the previous lessons and in addition:—

1. Show the class how to check the horse when on the move.

2. Caution them about keeping the correct distance.

4th Lesson.—Repetition of the previous lessons and :—

1. Begin getting the men's position in the saddle.

2. Do turns at the walk.

The following time-table is suggested as a very rough approximate guide in the use of these first four lessons on the first four days that the recruit goes to the riding school.

Monday.

1st Lesson.	Leading in hand	...	...	10 mins.
	Stirrup fitting	...	...	15 mins.
	Mounting	...	...	5 mins.
	Turn in tracks	}	...	10 mins.
	Walk march			
	Halt	}	...	5 mins.
	Dismount			
	Mount	}	...	5 mins.
	Walk march			
	Halt	}	...	5 mins.
	Dismount			
	File out			

Tuesday.

Repetition.	{Mount and turn Walk march}	...	...	5 mins.
2nd Lesson	...	...	...	10 mins.
Mount and walk march	...	...	...	10 mins.
Repeat 2nd Lesson and file out	...	...	...	10 mins.

Wednesday.

Repetition of 2nd Lesson	...	...	...	10 mins.
Mount and walk round school	...	...	...	10 mins.
3rd Lesson	...	...	...	5 mins.
Repeat 3rd Lesson on the move	...	...	...	5 mins.
Repeat 2nd Lesson	...	...	...	5 mins.

Thursday.

Walking round and repetition of 3rd Lesson	...	...	...	10 mins.
Repetition of 2nd Lesson	...	...	...	10 mins.
Walk round	...	...	...	5 mins.
4th Lesson	...	...	...	25 mins.

III. TROTting LESSON (First Stage)

Position of the class—semi-circle at the end of the school

1. Tell the class that the trot is the next pace after the walk and is the pace most used when long distances have to be covered quickly.

2. Show the trot, bumping in saddle, and tell the class what you want them to do.

3. Tell the class that all you are going to do at present is to get them trotting round for short periods to settle them down and give them the feel of the trot.

4. Walk the class round the school and tell them to ease their reins and press with both legs until their horses begin to trot, and to sit down and bump in their saddles, keeping the rein loose with the end in one hand.

5. Tell the class how to decrease pace from trot to walk, and make them do it.

(Continue this until the recruits can make their horses trot from the walk when required and have become accustomed to the feel of trotting.)

IV. TROTting LESSON (Second Stage)

Position of the class—as above

1. Tell the class that, now that they know how to trot round bumping, you are going to teach them how to rise at the trot.

2. Show the trot whilst bumping and rising and explain the difference.

3. Start the class trotting round the school and teach them to rise, riding alongside each man in turn and timing him by his horse's fore-feet.

(Continue this until the men know how to rise or bump at the trot at will.)

V. TROTting LESSON (Third Stage)

Position of the class—as above

1. Tell the class that they know how to bump or rise at the trot and that you are now going to get them into the correct position at the trot.

2. Show the correct position at the trot.

Start the class trotting and correct each man's position individually.

Demonstrate faults as they occur in individuals and correct them :—

- i. Body too far back—result rising on reins and stomach leading.
- ii. Body too far forward—result rising on fork.
3. Further points to emphasize and go into about trotting as the class become more advanced :—
 - i. Knee on saddle, lower leg slightly back.
 - ii. Leathers taut, pressure on irons, heels sunk.
 - iii. Stomachs in, backs supple.
 - iv. Rising over the hands.
 - v. Shoulders leading.
 - vi. No exertion, neck muscles relaxed, body supple from hips.
 - vii. Changing diagonals at the trot.

VI. CANTERING LESSON (First Stage)

(The first cantering lesson may be begun before the third trotting lesson at the discretion of the instructor.)

Position of the class—at the end of the school in a semi-circle

1. Tell the class that the canter is the next pace after the trot.
 2. Show the canter and explain that at the canter the seat differs from the seat at the rising trot in that at the canter they must further relax their loins and sit down in their saddles.
 3. Tell the class that all you are going to do at present is to get them cantering round and give them the feel of the canter.
 4. Get them trotting round the school and tell them to apply pressure with the legs and, if necessary, feel both reins until they get their horses to canter.
- (Continue this until the men can make their horses go into a canter from the trot without any difficulty and are familiar with the feel of the canter.)

VII. CANTERING LESSON (Second Stage)

(To be begun as soon as the men can make their horses go into a canter from the trot without any difficulty and know the feel of the canter.)

Position of the class—at the end of the school in a semi-circle

1. Tell the class that, now that they can make their horses

canter without any difficulty and know what it feels like, you are going to get them into the correct seat and position.

2. Emphasize the man's seat and show the correct seat.

3. Start the class cantering and correct each man's seat individually.

Demonstrate faults as noticed :—

- i. Body forward—result, rider bumps the saddle ; lower leg displaced to rear—result, loss of control.
- ii. Body back—result, lower leg useless and weight on loins.

Pay attention as progress is made to the following additional points :—

- iii. Pressing on irons, heels down, lower leg just behind the perpendicular.
- iv. Suppleness and rhythm.
- v. Elbows still but not stiff.
- vi. Shoulders not behind the perpendicular.
- vii. A long rein—a short one will make the man bump the saddle.

VIII. CANTERING LESSON (Third Stage)

(To be begun when the class have acquired the correct seat at a canter and are ready to practise the application of simple aids.)

Position of the class—at the end of the school in a semi-circle

1. Tell the class that up to now you have only dealt with the canter as far as it concerns the man's seat and position, and that you are now going to begin dealing with the horse side of it.

2. Show the canter and draw attention to horse leading with the fore leg in front and the hind leg on the same side in rear.

3. Explain and demonstrate cantering true and disunited.

4. Explain how the rider can see and feel that his horse is cantering on the correct leading leg and united.

5. Explain the aids for the canter.

6. Make the men canter, trot and canter again until they use the correct aids, and can strike their horse off on a named leg as required.

Points to be attended to during the third stage :—

1. Do not let the recruit look down to see with which leg his horse is leading. If his horse is leading with the wrong

leg, tell him so, and by degrees he will learn from the feel to know whether his horse is right or wrong.

2. As progress is made, explain that it is difficult for a horse when cantering to circle or turn away from the side of the leg with which he is leading; and that he should be made to change if necessary before the turn or circle is made. Emphasize how important this point is in training a charger and making him handy.

3. As the recruit progresses, explain the importance of the following sentences:—"As the horse becomes more advanced in his training, it will not be necessary to turn the head slightly to the left (or right, as the case may be). The trained horse should be able to bend lead and turn simultaneously in the same direction" (Sec. 48, 3).

With the trained man and trained horse it becomes unnecessary to bend the horse's head away from the leg with which he is going to lead.

4. The importance of rising at the trot on the opposite diagonal to the leg on which he wishes the horse to strike off at a canter should be impressed on the recruit as soon as he is capable of changing diagonals.

IX. VAULTING LESSON

(This lesson may be begun as soon as the recruit can trot fairly well. It provides an interesting variation for him in his trotting and cantering lessons.)

Position of the class—on the side of school, open interval

1. Explain the objects of vaulting, *i.e.* is a good physical training and suppling exercise; gives the recruit confidence, and teaches him to dismount and mount quickly; makes horses quiet and steady and, when practised in half sections, the vaulting horse being led, is good for teaching horses to lead.

2. Demonstrate, down and up near side.

3. Explain how it is done.

Still holding the reins, drop both hands on the front arch of the saddle and take the feet out of the stirrups. Then get the body forward over the front arch of the saddle and withers, bend the arms, throw the feet well up and out behind and vault to the ground. Run forward a few paces, jump forward in line with the front feet, shoulders square to the front, duck the head down, throw the right leg up, pull with the arms and you find yourself in the saddle.

4. With the class halted in the track, practise them in vaulting off, making each individual vault off, remount as quickly as possible in any way he likes and vault off again until he can do this correctly. Demonstrate faults to individuals as they occur.

5. Demonstrate at the trot, down and up again.

6. Dismount yourself. Mount the class, trot them round the track and give the order "Near side vaulting—In succession dismount and mount, second file commence". Then go to any individual who has difficulty in getting up; see that he has got his shoulders square to the front; make him jump well forward and, as he pulls himself up, assist him into the saddle by catching hold of the seat of his pants.

7. Demonstrate and correct faults in individuals as they occur.

Points for the recruit to pay attention to :—

(a) Vault clean out of the saddle.

Do not crawl out or slip down.

If you do not get your legs clean out of the saddle, the right leg will catch in the rear arch and may bring you down among the horse's feet.

(b) Keep square to the front and jump well forward before springing up; otherwise you will land on the rear arch.

(c) Hold on at all costs; provided that you jump well forward, the faster the pace, the easier it is to get up.

(d) Straighten your back the moment you are in the saddle. Later teach the class to vault up at the halt.

X. BENDING LESSON (First Stage)

Position of the class—on the side of the school, tails to the boards

1. Tell the class that they know how to get their horses to go forward at all paces and that you are now going to teach them how to make their horses move sideways. Tell them shortly the objects of the exercise and explain that there are four variations of it when done in the riding school—"Half pass", "Pass", "Shoulder in" and "Shoulder out"—and that they are going to begin with the "Shoulder out" because it is the easiest to do, as the boards can be made use of to help them.

2. Place your horse and demonstrate the "right shoulder out".

(If you have plenty of time, e.g. if the class are having a few minutes' rest, demonstrate the "Shoulder in", "Pass" and "Half pass" as well, to show them the variations.)

3. Explain how to place the horse for the "Right shoulder out" and the aids for making him pass off to the left: *i.e.* walk the horse round the school on the right rein, make a right turn until halfway across the school, then incline half left and halt and collect the horse with his head about half a yard from the boards (the horse is now placed with his body at an angle of 45 degrees to the boards): then bend his head to the left with the left rein, supporting and regulating his action with the right rein, and by increasing the pressure of the right leg make him move off sideways in a direction parallel to the side of the school, placing the off leg in front of the near leg.

4. Walk round the school on the right rein, right incline, place your horse on the side opposite the class, collect him and demonstrate the "Right shoulder out" again, moving forward round the school when you have passaged the requisite distance.

5. Move the class off round the school on the right rein, give the order "Right turn", followed, when they are halfway across the school, by "Left incline": when they are near the boards, give the order "Halt" followed by "Right shoulder out—March." When they have passaged a few paces, give the order "Forward", when they move on round the school at a walk.

6. Point out and demonstrate faults which have been noticed.

Points to be noted :—

1. The following should be brought out by degrees in successive lessons in explaining the object of the exercise :—

i. *Uses of the exercise for the man* :—It teaches him to control his horse's forehand and quarters and to place him as required, and is excellent for teaching him to use his hands and legs in harmony.

ii. *Uses of the exercise for the horse* :—It makes him obedient and sensitive to hand and leg, is an excellent suppling and balancing P.T. exercise, develops the muscles of his back, forehand and loins, and teaches him to carry his head; it is an excellent preliminary preparation for teaching a horse to strike off with the required leg leading at a canter and to turn on his haunches.

2. The following points must be brought out gradually and the faults corrected by degrees as the recruit progresses :—

See that the horse's head is bent just behind the poll, not at the shoulder, in the direction in which he is moving. If

he bends his whole neck from the shoulder instead of from just behind the poll, the rider loses control of his forehand. If he is moving laterally with his head bent away from the direction in which he is going, the exercise loses all its balancing and suppling effect on the horse. See that the horse's quarters do not precede the forehand and that he is not allowed to step backwards. See that he is always up to his bit and ready to go forward if required to do so.

3. Avoid coming and going with the forehand and quarters alternately, *i.e.* balance the aids and keep the axis of the horse's body moving on parallel lines.

4. Avoid too long reins.

5. Avoid exaggerated body movement with the inactive leg stuck out to one side.

6. Insist on the recruit looking in the direction in which he is going.

XI. BENDING LESSON (Second Stage)

THE HALF PASS AT A WALK

Position of the class.—At the end of the school in line facing inwards and close to that side of the school from which the instructor is going to demonstrate the half pass towards them.

1. The class already know how to do the shoulder out and the aids for it. Explain that the half pass is the same movement for the horse as the shoulder out, but that he has not got to be placed in position before the exercise begins.

(The instructor should here give a very short demonstration of the shoulder out and half pass, pointing this out.)

The objects of the exercise for horse and man are the same as in the shoulder out (see previous lesson), and it can be done at the trot and canter as well as at the walk.

2. Demonstrate.

Walk round the school away from the class on the right rein. At the "C1" marker (Sec. 55) bring the horse to a collected walk and, on arrival at the "Q1" marker, make him do the right half pass across to the "Q3" marker diagonally opposite. On reaching the side of the school, repeat the exercise by walking on round with a loose rein, bringing the horse to the collected walk again at the "C1" marker and doing the left half pass across the school, this time away from the side.

3. Explain the aids and the importance of the following points :—

i. Collecting the horse before starting the half-pass.

- ii. Bending his head in the direction to which he is going to pass before starting the half pass, so as to lead his forehand away correctly.
- iii. Using the supporting leg to keep him up to the bit and to prevent his quarters preceding his forehand, and the supporting rein to regulate and assist the action of the other rein in controlling his forehand.

4. Demonstrate.

5. Execute: at first making the class do the exercise individually; afterwards doing it as a ride at two horses' length distance on the order "In succession at the 'Q1' marker. Right (or left) half pass".

6. Place yourself near that side of the school from which the class start the half pass and facing them. Point out and correct faults as they occur.

Note.—Lessons can be prepared on exactly the same lines for the half pass at the trot and canter as the class progress in their training.

XII. REIN BACK LESSON

Position of the class—down the side of the school, tails to the boards

1. Tell the class that you are now going to teach them how to make a horse step backwards or "rein back" and tell them shortly the objects of the exercise.

2. Demonstrate the rein back.

3. Explain how it is done and the elementary use of the aids:—

First send the horse up to his bit and get his hindquarters under him by a pressure of both legs: when you have done this, feel both reins to induce him to step backwards. As soon as he obeys and steps back the requisite number of paces, halt him by easing the reins, and by pressure of the legs keep him up to his bit with his hindquarters under him.

4. Demonstrate again, starting at a walk, then walking collectedly, halting, collecting the horse and reining back.

5. Move the class off round the school at a walk and give the lesson as follows:—

"Walk collectedly."

On this order, each man will apply a gentle pressure of both legs and feel both reins so as to make his horse step shorter.

" Halt."

On this order, each man will halt and collect his horse.

" Rein Back. March."

On this order, each man will rein back.

" Halt."

On this order, each man will halt and collect his horse and await a repetition of the order *" Rein Back. March "*.

" Forward."

On this order, the original pace will be resumed.

6. Demonstrate and correct faults as they occur :—

- i. Horse running back out of hand—due to heavy hands and weak legs.
- ii. Rider having a dead pull on the mouth, which will make the horse set his jaw and stand up.
- iii. Quarters flying out prevented and corrected by direct rein of opposition combined with the leg.
- iv. Halting uncollectedly.

Points to be noted :—

1. The following should be brought out in explaining the objects of the rein back, not necessarily all at the first lesson, but when the instructor thinks that the recruit has made enough progress to understand the points.

- i. As an exercise for training the man, it teaches him to control and place his horse and to use his hands and legs correctly and in harmony.
- ii. As an exercise for the horse, it teaches him to obey the hands and leg and is a good P.T. exercise ; it supple him, gets him on to his hocks, makes him light in hand and generally improves his balance and collection.

2. The lesson as given in para. 5, above, can be done at the walk, trot and canter as the class progresses.

3. After the first few times this lesson is better done on the centre of the school, where the rider will obtain more practice in reining back in a straight line without the boards to help him.

4. Avoid reining back with a low head carriage.

XIII. LESSON IN TURNING ON THE HAUNCHES

Position of the class. On the side of the school, facing inwards

1. Explain the objects of the exercise :—

- i. *For the horse.*—It teaches him obedience, lightens his forehand and improves his balance. A horse

turning on the centre cannot make a short turn when going at a fast pace : still less can he do so when turning on his forehand. But, if he turns on his haunches, he will neither fall nor jar his forelegs by overweighting them and, when he has made the turn, he is collected with his hocks under him and ready to jump off again.

- ii. *For the man.*—It teaches him to use his legs and hands correctly and in harmony and eventually to manœuvre his horse quickly and readily in sword work and mounted combat.

2. Demonstrate the right about turn on the haunches in the centre of the school.

3. Explain how it is done and the aids :—

Right turn.—Collect the horse, lead the forehand round with the right rein supported by the left against the neck. Close the left leg strongly to prevent the haunches flying out. Lean the body back and slightly to the right. The off-hind leg is the pivot of the turn.

4. Make the class do the exercise.

- i. At first do it at the halt and using the sides of the school to prevent the horse moving back or letting his quarters fly out : to do this, place four of the class at a time, one in each corner of the school, horses with their tails in the corner and standing along one side of the school.
- ii. Next do it, still at the halt, with the class on the side of the school, still using the boards to prevent the horse moving back, but leaving it entirely to the rider's leg to prevent his quarters deviating.

- iii. Next do it with the class on the centre of the school, where they get no assistance from the boards, still at a halt.

- iv. Practice ii and iii again on the move as the class progress.

5. Demonstrate and correct faults in individuals as they occur :—

- i. Lack of collection.
- ii. Letting the horse get behind his bit.
- iii. Allowing him to move his quarters to the left against the left leg. If he does this, he should be made to passage round in a circle for a few steps away from the leg.

Note.—The turn on the haunches should be practised first at the halt, and then from the walk, trot and canter as the recruit progresses, the horse being brought to a collected pace before the turn is made.

XIV. LESSON IN CHANGING AT THE CANTER

Position of the class, at the end of the school, facing inwards

1. Explain the objects of the change at the canter.
 - i. *For the horse.*—The recruit has already been taught in the cantering lesson, third stage, that to be able to turn quickly and safely at a canter a horse must lead with the fore and hind legs on the side towards which he is turning. If he is not leading with those legs, he must be able to change at once on to them before he makes the turn. Changing at a canter, especially on the straight, is also an excellent balancing and suppling exercise for the horse and makes him handy and obedient to hand and leg.
 - ii. *For the rider.*—Besides being the highest test of harmony and rhythm in the use of the aids, it teaches him to control his horse and turn him quickly in sword work and mounted combat.
2. Demonstrate the change at a canter (i) in doing a figure of 8, (ii) on a straight line down the centre of the school.
3. Explain the aids for the change.
4. Demonstrate the change from the off fore off hind to near fore near hind in the way you are going to ask the class to do it, which is as follows :—Go round the school away from the class at a collected canter on the right rein : on arrival at the " C1 " marker, turn down the centre of the school until opposite the " H1 " and " H2 " markers, then do a right half pass to the " Q3 " marker : as you reach the side of the school at the " Q3 " marker, ease the pressure of the left leg and apply stronger pressure with the right leg. You are now applying the aids for the change, *i.e.* collect the horse : turn his head slightly to the right and cause him to change by a stronger pressure of the right leg, preventing any undue deviation of the quarters with the left leg.

When the horse has changed, bend his head slightly to the left, canter on round the school to the " C1 " marker again, turn down the centre as far as the " H1 " and " H2 " markers, left half pass, and change back again on to the off fore off hind at the " Q2 " marker.
5. Make the class carry out the exercise one at a time.
6. Demonstrate and correct the following faults as they occur :—
 - i. Not keeping the horse collected, but allowing him to get on his forehand when the rider about to ask for the change.

- ii. Using the weight of the body incorrectly when applying the aids. Leaning the body forward means loss of power in the use of the legs. This and swinging the body forward to the side on to which the change is being made are common causes of the horse changing in front without changing behind.
- iii. Applying the aids at the wrong moment. The right moment is when the leading leg comes to the ground.
- iv. Roughness and exaggeration in the application of the aids. They should be applied as gently as possible and the change should be calm and smooth.

Note.—As the rider becomes more advanced and more adept in the use of his hands and legs, the meaning of the following sentence should be carefully explained to him:—"As the horse becomes more advanced in his training, it will not be necessary to turn his head to the right. The trained horse should be able to bend, change, lead and turn simultaneously in the same direction." With the trained man and trained horse it becomes unnecessary to turn the horse's head away from the side on to which he is going to change.

XV. JUMPING LESSON (First Stage)

1. Demonstrate the correct method.
2. Explain that sitting a horse over a fence is the same as instinctive movement of the body on a dummy horse when it is rocked by another man, but that, in addition, grip is necessary, to counteract forward movement of the horse. Explain the use of the legs.
3. Demonstrate the correct method again.
4. Execute.
5. Explain, demonstrate and correct the following common faults as they occur :—
 - i. Body too far back or failing to get forward as the horse raises forehand.
 - ii. Body too far forward on the approach.

Notes.—Confidence devices may take the form of stirrups tied and neck strap; neck strap only, arms folded; breeches gripped, etc.

At first a low bar, just high enough to make the horse jump, will suffice, but, as progress is made, small fences should be used.

It will be found beneficial to the men, and will usually obviate rushing on the part of the horse, if three or four men are sent round at a time with plenty of distance between each.

Stirrups should be used at first and later considerable practice given without them.

Reins should either be held at the end, passed over the arm or knotted.

It is best to aim at a good seat before dealing with the lower part of the leg.

XVI. JUMPING LESSON (Second Stage)

In this stage the rider should have complete control.

1. Explain why the horse stretches out his head and neck when jumping and how the rider's hands should conform to this movement in order to keep constant light feeling on the horse's mouth.

2. Explain and demonstrate the correct movement of the body and hands during the jump, *i.e.* close the lower part of the legs and body forward over the hands; then the hands forward; then the body upright; then the hands gently back.

3. Explain and demonstrate the results of the body faults if now committed, *see* para. 5, i and ii, of Jumping Lesson (First Stage).

Note.—If a rider is left behind, he must allow his reins to slip through his fingers.

4. Demonstrate the correct method again.

5. Execute.

6. Explain, demonstrate and correct the following common faults as they occur :—

- | | |
|--------------------------|--|
| i. On the take-off side. | Trying to lift the horse over the fence.
Losing contact with the horse's mouth.
Lower part of the legs stiff or in bad position. |
| ii. On the landing side. | Drawing the hands back too soon.
Leaving the hands too long.
Bad leg position. |

XVII. NOTES ON PRESENTING A HORSE AT A FENCE

(These notes are only intended for the use of good riders who are exceptionally advanced in their training such as selected N.C.Os. who are preparing for show jumping competitions and similar events.)

1. In front of every fence there is a zone from which a horse can jump with the greatest ease and with the greatest chance of clearing the obstacle. Such a zone is shown in the diagram below and is marked ZZ, and it will be noticed that the lower the obstacle, the wider is the zone, and the higher the obstacle, the narrower is the zone.

Presenting a horse at the fence consists in bringing him into

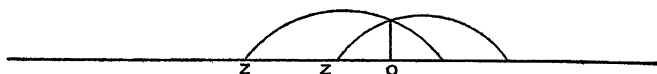


FIG. 26.

this zone, balanced and collected, facing his fence and with sufficient momentum to enable him to clear the fence.

"Coming right" at a fence means, therefore, that the horse arrives at and jumps from some point in ZZ. (Figs. 26 and 27.)

"Coming wrong" means that he arrives at and tries to jump from some such points as W.1. and W.2. in Fig. 27.

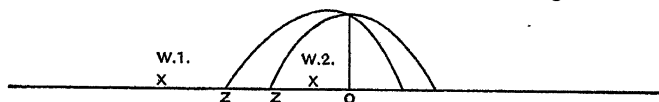


FIG. 27.

It is desirable, therefore, to eliminate the chance of jumping from W.1. or W.2. and to control the stride of the horse so that he arrives in ZZ.

2. As the rider approaches his fence he collects his horse and at the same time considers the position of the zone for the particular fence. (As a rough guide, the centre of the zone

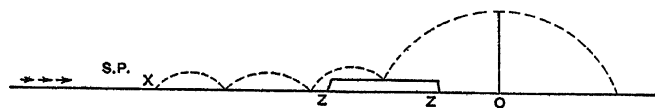


FIG. 28.

lies at a distance from the fence of about $1\frac{1}{2}$ times the height of the fence.) He then picks up a point SP, two, three or more strides from the centre of the zone (three strides is convenient) and, arriving there fully collected, he allows his horse to regain his normal stride without allowing him to get on to his forehead and in three strides reaches the zone, where he gives the "office" and should get a good jump (Fig. 28).

Note.—The width of the zone must not be confused with the distance of the centre of the zone from the fence. As the fence becomes higher, the distance of the centre of the zone from it becomes greater, but the width of the zone itself becomes less.

3. This sounds difficult, but practice soon enables the rider to recognize the so-called "slipping point" (SP) with increasing success. A greater difficulty, perhaps, lies in maintaining collection during the acceleration from the "slipping point", and constant stress has to be laid on the absolute need of doing so.

Failure of judgment in selecting the "slipping point" does not mean disaster; the rider may still get into the zone by riding his horse to lengthen his last two or three strides instead of allowing his horse to take normal strides, although in doing so he must be especially careful not to unbalance him. Or, conversely, it may sometimes be advantageous to shorten a stride. In such case the rider must remember that the horse must have freedom on his last stride. If any attempt is made to shorten the last stride, the horse is likely to have his head in the air at the critical moment of jumping, or in any case will have lost all the rhythm of his approach.

4. It is important to appreciate that there are two main considerations in presenting your horse at a fence:—

- i. To arrive in the zone.
- ii. To arrive there in a state of balance.

The smoother the approach can be, and yet fulfil these conditions, the better will be the performance.

It will be seen, therefore, that much depends on whether the horse is naturally disposed to approach his fence in a state of balance. If he is not, it will become necessary to take him out of his normal stride in order to put into him the collection which is all important on his arrival in the zone.

APPENDIX II

GUIDE TO RIDING-SCHOOL EXERCISES IN
TRAINING THE YOUNG HORSE

I. GENERAL CONSIDERATIONS

1. It is laid down in Sec. 58 that a trained charger or troop horse must, among other things, be :—

- i. Well balanced and capable of carrying a heavy weight over long distances without loss of condition.
- ii. Handy and quick in obeying the correct aids.
- iii. Capable of being ridden with *one hand at any pace* either in the company of other horses or alone.

These three qualities of training are essential in any horse that is to be a pleasant and enjoyable ride, and the more perfect he is in these respects, the better and more useful he will be.

2. The first quality required in the finished horse is that he should be well balanced and capable of carrying a heavy weight over long distances. "Balance" is defined in Sec. 32, 5.

By a well-balanced horse is meant one whose conformation, physical power and muscles are such that he can adjust his centre of gravity without difficulty, either backwards, forwards or sideways, and by so doing can facilitate a decrease or increase of pace or change of direction as required. He gets his centre of gravity back partly by raising his head and neck and partly by getting his hocks and hindquarters under him and using his loins to lighten his forehead.

3. However good his conformation may be, an untrained or unfit horse very soon tires in his balancing muscles, which consist chiefly of the muscles of his neck, withers and loins, and he then becomes incapable of adjusting his equilibrium as required ; in other words, he begins to ride heavy in front and to lean on the rider's hands. Some horses are naturally more sensitive to the bit than others, just as they are more sensitive to the leg or are more apt to be worried by flies. But no horse, however insensitive, will willingly endure pain from the bit if he understands what he is intended to do in

order to escape from it and is physically capable of doing so. The pressure of the bit may keep an unfit horse balanced for a time, because he will try to save his mouth from pain as long as his muscles allow him to do so ; but a point arrives when his muscles are too tired to function properly, and it is then physically impossible for him to get his weight back on to his hocks and obey the bit promptly and well.

When this point arrives, pressure on the bit is not only making his mouth dead and teaching him to pull and bore, but may also result in injuries to the bars which will permanently ruin it.

4. Just as some men are naturally better at gymnastics and games than others because they are better made and have more muscular control over their limbs, so some horses are naturally better balanced than others. But within limits balance can be developed in any horse just as it can in any man, and, however good a horse's natural balance may be, it will always be capable of improvement and will need training before it becomes permanent and is as good with a rider on his back as without.

In the development of a horse's balancing muscles his weight-carrying muscles and his whole body generally are being developed also, and the time spent in doing this corresponds to the time spent in developing a man's physique in the gymnasium or elsewhere. The exercises practised in the riding-school, if properly done, are as beneficial in muscling up and suppling the horse as a properly thought out course of gymnastics is in setting up a man and making him quick and active.

5. Before the horse can be handy and quick in obeying the correct aids and capable of being ridden with one hand at any pace, he must be well balanced, and in carrying out the exercises given in detail in this appendix he not only improves his balance but develops these other qualities as well and learns instant obedience to hand and leg.

6. From the beginning the trainer must bear in mind that the trained horse is expected to be perfect at all his work when ridden with only one hand on the reins.

As soon as he does simple turns and circles well with both hands on the reins using the direct rein, he should be gradually taught to do them in obedience to the indirect rein, the rider at first using two hands and applying the direct rein with one hand and the indirect with the other, and afterwards using the indirect rein with one hand only. (*See Secs. 43 and 48.*)

As soon as the horse becomes perfect at each successive exercise when ridden with two hands, he should be brought

on to do that exercise in the same way when ridden with one hand only, while at the same time he is being worked at the subsequent exercises with both hands on the reins.

7. All work should be done on the snaffle until the trainer is sure that the horse understands the aids and has got his balancing muscles sufficiently developed to enable him to carry his head in the proper position and to respond without difficulty or delay to the bit. If he uses the bit too soon, he is very likely to make his horse "behind the bit", "over the bit" or "over-bent" and will then have to start again from the beginning with a horse which he has spoilt.

In using the snaffle it must be remembered that the ordinary jointed snaffle can in some cases be a most severe and painful bit. It is far more efficient for raising the horse's head than a half-moon snaffle or the army bit used as a snaffle, but, if a horse is very free and has a sensitive mouth, its nut-cracker action, enclosing the lower jaw, will often make him fret and pull and he will probably endeavour to escape the pain by throwing up his head and star-gazing. A standing martingale will be no cure. It may forcibly prevent him from throwing up his head, but he will probably fight against it the whole time and, if he does, he will never become a pleasant and well-balanced ride. With such a horse it is best to try an unjointed snaffle, which has no nut-cracker action, or a "Newmarket" snaffle or a "Puckle" noseband on the ordinary jointed snaffle; one or the other will probably remove the pain and induce him to go kindly. With a half-moon snaffle a horse is less likely to start getting his tongue over the bit.

8. The riding-school exercises given in the following sections are in logical sequence, but this does not mean that the horse must always be perfected in one exercise before he can begin the next. If carried out properly and systematically, they will be found excellent for developing the qualities mentioned in para. 1, above. It is assumed that, before starting them, the horse has reached the early part of the second stage in his training (*see* Sec. 58, 4, ii), *i.e.* is in good condition, quiet to ride, goes freely up to his bit on a snaffle and can do simple turns and large circles at a walk, trot and canter.

9. To get the best and quickest results, the trainer must regulate the horse's food and exercise so that, although he is fit and well and improving daily in condition, he is never so fresh that he does not pay attention to his lessons. He should also make a point of riding and schooling him every day himself: on days when it is impossible for him to spare the time to give him his full amount of work he should ride

him and school him for a short period after he has been quietly exercised by someone else.

10. It must always be remembered throughout these exercises that they are very tiring to the horse and that in doing them he is using muscles which are at first weak and unaccustomed to be used in this way. He should only be asked to do the exercises for very short periods to begin with, the periods being extended by degrees as his muscles get stronger. He should be given frequent periods of relaxation and loose rein work between the exercises to ease and rest his muscles and, as his training progresses and his balance improves, he should be given more and more loose rein work (*see* Sec. 58, 17, and Sec. 59).

II. DETAIL OF EXERCISES

1st Exercise. The balanced or collected trot and extended canter.

From trotting at the ordinary pace of eight miles an hour the horse must be taught to raise his head, get his hocks under him, lift his knees and shorten his stride until he is trotting less than six miles an hour. The rider presses him with his legs on to the bit, using his hands to make him raise his head. The horse should trot short and high and well up to his bit and the rider will have to use a certain amount of leg pressure the whole time to keep the horse's hocks under him. It is most important in this and all the subsequent exercises that the pressure of the legs should always precede any pressure on the reins.

This exercise is very tiring for the horse and at first should be done only for a dozen paces at a time, the number being gradually increased as the horse becomes stronger.

It should be interspersed with the extended trot up to ten miles an hour. The horse should be pressed on from the ordinary trot until he is trotting out as fast as he can round the school; he should then be brought back to the ordinary trot by pressing with the legs and feeling the reins, and from the ordinary trot to the balanced trot. Frequent repetitions of this variation—ordinary trot—extended trot—ordinary trot—balanced trot—ordinary trot—extended trot—ordinary trot—balanced trot, etc., are excellent for giving the horse balance and teaching him to come back readily to the hand with his hocks under him. But the rider must use his legs properly to get the horse's hocks and quarters under him when decreasing pace and not rely on his reins alone to do this.

Note.—After doing this exercise for any length of time, and in fact after all these exercises, the horse should be allowed to trot and walk quietly along with a completely loose rein, stretching his head and neck out and down as much as he wants to; this eases his tired neck muscles and gets the blood back into them, besides teaching him to go quietly on a loose rein without pulling.

2nd Exercise. The half-pass and pass at a walk and the half-pass at a trot. (See Secs. 49 and 67.)

It is usually best with most horses to do the half-pass first, as it is easier to maintain impulsion at this than at the full pass. This is the finest of all exercises, when correctly executed, for developing the horse's balancing muscles, suppling him, making him obedient to hand and leg and getting his quarters and forehand under control. The horse must learn to do it in obedience to the diagonal aids; that is, he must pass to the right with head bent slightly to the right, the bend being just behind the pole and in response to pressure from the left leg. If he passes in response to lateral aids, that is to say passes to the right from pressure of the left leg and with his head bent to the left, the exercise loses all its suppling effect and his forehand is not under control. His head should be carried high and his hocks should be well under him, walking and trotting collectedly as the case may be, before he is asked to begin the half-pass or pass.

This exercise should be continued every day, slowly and little by little, until the horse will do the half-pass and pass freely to the right and left and will change from one to the other readily (the "counter change of hand"), his head all the time being carried at the proper height and bent in the right direction. It can be practised anywhere, from side to side of the road and back again or in the open country. By degrees the horse will learn to do the pass and half-pass at the slightest pressure of the leg, and all the time he is developing his balancing and weight-carrying muscles.

To make sure of instant obedience to hand and leg, make him half pass three or four steps to the right, then the same to the left and repeat; it is the quickness of the change and of the first step to either hand that marks the degree of his obedience.

The more perfect a horse is in passing, the easier it is to teach him to turn on his haunches and to strike off at a canter correctly on a named leg; in fact, a great deal of passing work is an essential preliminary to these exercises. (See note at end of 1st Exercise.)

3rd Exercise. The rein back.

The rider should start by getting an assistant to stand in front and tap the horse's legs with a stick or touch them with his feet, while he feels the reins. The horse will very soon learn to step back from the pressure of the bit without any assistance.

Once the horse realizes what is wanted, his rider should always squeeze him up with his legs on to the bit and make him get his hocks under him so that he reins back properly balanced. He should be stopped every few steps by increasing the leg pressure and easing the reins and should be made to go forward and the exercise repeated.

It can be done after halting from the walk, trot or canter, the horse being made to start forward again at once into a walk, trot or canter, as the case may be, and is excellent for getting a horse to balance himself and lighten his forehand.

When the horse does it readily, it will still further improve him to rein back up an incline.

Before he can be considered perfect at it, the rider must be able to make him halt instantly in his rein back and go forward instantly when he increases the pressure of his legs.

This exercise is a great help in curing pullers. (See Sec. 78, 6, and note at end of 1st Exercise.)

4th Exercise. Turning on the haunches.

The horse by now should move sideways, forwards and backwards at a walk at the slightest definite indication from hand and leg.

The first stage of this exercise consists in making the horse pass round on a circle instead of on a straight line. If he has been taught to do the ordinary pass freely and well, it will be found that there is little difficulty in getting him to do this by slightly increasing the action of the hand in leading him off to the right or left, as the case may be.

The rider should lean slightly back and to the side to which he is turning, so as to discourage the horse as much as possible from moving the inside leg, on which he is required eventually to pivot. At first the horse describes one circle with his fore legs and another smaller circle inside this with his hind legs. By degrees the size of these circles is diminished until he pivots on the inside hind leg. The natural tendency for the horse at first in making a turn is to move his forehand one way and his hindquarters the other—*i.e.* to turn on his centre. If he is being turned on the haunches and he shows a tendency to let his hindquarters fly out against the rider's leg and turn on his centre, he should be made to pass away again slightly from the leg and do the turn on a small circle again instead of on a pivot.

By continuous practice at this exercise the horse not only improves in balance and obedience to the aids, but he learns to get back on his hocks when making a turn, one of the most essential points in his training.

When he is perfect at turning on the haunches at a walk and will pass well at the trot and canter, he is gradually brought on to do it from these paces in the same way. (*See note at end of 1st Exercise.*)

5th Exercise. The balanced or collected canter and extended canter.

This exercise is much the same in principle as the balanced trot and should be interspersed in the same way with the ordinary canter and extended canter.

The horse's action is made higher and his stride is shortened by pressing him up to his snaffle and getting his hocks under him, at the same time feeling the reins more firmly. The use of the legs in decreasing pace is specially important.

The exercise is done for a short distance at first and gradually increased, as for the balanced walk and trot.

Care should be taken not to raise the horse's head too much. If this is done, there is a danger of his hollowing his back and star-gazing, and he is then just as much unbalanced as if he is carrying his head too low.

This exercise should be continued until he will shorten up his stride and come back to the hand quietly and smoothly, as in the balanced trot, and extend himself again at once when required. It is a most important exercise for any horse such as a troop horse or charger, which may be asked at any moment to come down from a fast gallop to a collected canter. (*See note at end of 1st Exercise.*)

6th Exercise. Striking the horse off into a canter with a named leg leading.

(This and the subsequent exercise, "the half-pass at a canter", are essential preliminaries to teaching the change at a canter.) It will be noticed in Sec. 48, 3, that the aids for striking a horse off into a canter off fore and off hind leading are given as follows:—"Collect the horse, turn his head slightly to the left with the left rein, lean the body slightly back and to the left and cause him to strike off into a canter with the pressure of both legs, the left leg the stronger. When the horse has struck off, change the bend to the direction in which he is moving. The horse must always canter united. As the horse becomes more advanced in his training, it will not be necessary to turn the head slightly to the left. The trained

horse should be able to bend, lead and turn in the same direction.

It will be found that, if the horse has been thoroughly taught to pass to either hand and obeys the hand and leg properly at these exercises, there will be very little delay or difficulty in teaching him to strike off into a canter on a named leg without bending his head away from that leg. He will soon learn to strike off as required from the pressure of the leg alone if he is properly collected before the leg is applied.

As long as he is cantering with his head bent away from the leading leg, he cannot be properly balanced and collected and his forehead will not be really under control.

If the rider wishes to start by striking him off on the near fore, he trots round the school at the balanced trot on the left rein. As he turns round the end of the school, he applies the aids for striking off on the near fore. If the horse does it correctly, the rider should make much of him, canter round, pull up to the trot and repeat the process once or twice. Then the rein is changed and the procedure repeated, the horse striking off this time on the off fore. If he strikes off on the wrong leg, he must be pulled up again at once to the trot and the aids applied again; the rider should go on until he does it correctly, then make much of him and canter on round.

After a short time he can be made to strike off with the outer leg leading when on the side of the school, pulled up to a trot as he comes to the corner and started again with the inner leg leading until he is round the end of the school, then pulled up again and started on the outer leg, and so on; and it will soon be found that he strikes off freely and correctly on whichever leg the rider requires. The exercise should be repeated on straight lines and in the open.

The rider must be careful in the use of the weight of his body as an aid. He should avoid the smallest tendency to exaggeration in this; if he overdoes its use, he will only upset the horse instead of helping him and the result may be that he will strike off "disunited". If he cannot be certain of using his weight correctly, he had better not use it at all.

This exercise should be continued until the rider can be quite certain of striking his horse off on a straight line on whichever leg he chooses, anywhere he likes and as often as he likes, smoothly and without pulling and fussing. He should go on until he can cross a field, starting into a canter, trotting, starting again into a canter and trotting again every few yards, and be quite certain that the horse will always strike off on the required leg.

This is a good balancing and suppling exercise. It should be done patiently and by slow degrees, so as not to overtire

the horse or make him fretful and fidgety. (See note at end of 1st Exercise.)

7th Exercise. The half-pass at a canter.

This is done from the collected canter in precisely the same way as the half-pass at the trot is done from the collected trot.

It is best to begin by doing a few paces at the half-pass from the side of the school, starting just after the horse has got round the corner at one end ; after doing a few paces the rider canters straight on to the end of the school and turns round at the end, keeping on the same rein, so that no change of leg is involved. By degrees he increases the number of paces until he can half-pass more than half across the school, and he then pulls up into a trot, strikes off again on the other leg and goes straight on round the school until he is ready to repeat the half-pass on the other rein.

This exercise should be continued until the horse is just as obedient to hand and leg when doing it as he is in the half-pass at a walk and trot and will do it smoothly and calmly without any fussing. When he is perfect at the 6th and 7th Exercise, he is ready for the next. (See note at end of 1st Exercise.)

8th Exercise. The change at a canter.

In teaching the horse this exercise use is made of the fact that he has been perfected in the 6th and 7th exercises and he is taught the change at a canter by the combination of these two.

The aids for changing at a canter are given in Sec. 48, 3.

It will be found that, if the horse has been taught absolute obedience in striking off on a named leg and has also learnt to half-pass well at a canter, there will not be much difficulty in teaching him to change in response to the leg alone and without having to bend his head away from the leg on to which he is changing, provided that he is collected before the change is asked for.

The exercise is carried out as follows :—

The rider canters round the school on the right rein at a collected canter. He makes his horse half-pass across the school, keeping him well collected, and, as he arrives at the opposite side, he decreases the pressure of the left leg and applies the right leg more strongly, so that he is now applying the aids laid down above, *i.e.* "Collect the horse, turn his head slightly to the right and cause him to change by a stronger pressure of the right leg"; and, provided that the horse has been well prepared in the 6th Exercise, it will be found that he will learn to make the change very soon, even if he has to be forced into it at the first few attempts.

By degrees he is brought on to change in the figure of 8 and other school exercises and then on the straight.

By doing the "counter change of hand" at the canter, that is, half-passing to one rein and changing and half-passing to the other, the horse can be gradually taught to change correctly every few strides in response to the rider's leg alone, provided that the rider is careful to maintain collection when asking for the change. He must also be very careful not to swing his body about. If he puts his weight forward towards the fore leg on to which he wishes the horse to change, he is very likely to cause him to change in front only. It is better not to use the weight of the body at all and to depend only on the pressure of the leg than to use it incorrectly. (*See note at end of 1st Exercise.*)

9th Exercise. The balanced or collected walk.

This exercise should logically precede the collected trot, but it is very difficult with a young green horse, which does not readily go away from the leg, to maintain sufficient impulsion to do it properly. It is placed last here, but in practice may be begun as soon as the rider feels that his horse is sufficiently free and responsive to the leg. It should be attempted for a pace or two before making the horse do the half-pass at a walk.

From walking out with his weight forward and head and neck stretched out the horse must be taught to get his hocks under him, raise his head and shorten his stride. The rider presses him with his legs on to the bit, using his hands to make him raise his head and step shorter. After a few paces the pressure on the bit should be relaxed and the horse encouraged to walk out freely again with a loose rein and head and neck stretched out. The exercise should be repeated frequently until the horse is good at it and can do it without effort. It is tiring for the horse (and also for the man, who has to do a good deal of work squeezing with his legs) and progress should be gradual, from a few steps at a time to once or twice round the school. (*See note at end of 1st Exercise.*)

III. BITTING THE HORSE AND WORK ON THE DOUBLE BRIDLE

1. It should now be considered whether the horse's balance and head carriage is good enough and whether he obeys hand and leg well enough to warrant his being put into a double bridle. If he places and carries his own head correctly on a snaffle and will do all these riding-school exercises proficiently, he may be bitted, but, as long as he is down on the hands, he is not ready for a curb bit.

2. When the horse is first bitted with a double bridle, he should be worked dismounted until he understands the action of the bit. Each day for two or three weeks at the end of his school work for the day the double bridle should be put on for about 20 minutes and the work carried on as follows: The trainer places himself on the near side, with the wall of the riding school on the horse's off side; He takes the bridoon reins over the horse's head in his left hand and leads him forward, holding his head up in the correct position. As the horse moves forward, he slightly feels the curb reins, which he holds under the horse's chin in his left hand. An assistant may be necessary to keep the horse moving forward. As soon as the horse bends his head and yields his jaw to the feeling of the bit, the trainer releases the tension on the bit reins and makes much of the horse. By frequent repetition and rewards the horse soon gets to understand what is required of him when the bit reins are felt, and learns to obey it quietly. He should then be ridden on a double bridle for a short time each day, after his work on a snaffle, and taught to flex properly when mounted. (See Sec. 69.)

3. When the horse understands the double bridle and bends his head and gives his jaw readily, he should be put through all these exercises again until he does them perfectly on a double bridle, first with both hands and then with only one hand on the reins.

4. Great care must be taken to make certain that he does the exercise in obedience to his rider's wishes, and not as the result of routine and habit; and to ensure this, they should be practised in the open at any odd moment and on any occasion.

For instance, the 1st, 2nd, 3rd, 4th and 9th Exercises can all be practised any day out hacking on the road or elsewhere, and the remaining exercises can be done at any time or place where there is some good ground on which to canter.

5. Great care should also be taken to make sure that the horse's paces do not get cramped by over-collection. He should be given canters downhill to teach him to use his shoulders and, as soon as he becomes proficient at the 5th Exercise and comes back readily to the hand, he should be given occasional short extended gallops, beginning with 200 yards or so and gradually increasing in distance, care being taken not to let him get out of hand and pull.

6. Once the horse has been really well mouthed and trained, and comes readily back to the hand from fast paces, there is not the same risk of his mouth being spoilt permanently by an indifferent horseman as there is with a horse which has a light mouth but is only half trained.

APPENDIX III

TRAINING OF THE DRAUGHT HORSE FOR
A TEAM

I. GENERAL CONSIDERATIONS

1. Before his training as a draught horse begins, the remount should, as far as the time available and circumstances allow, be put through the same course of training as that laid down in Sec. 58. The average draught horse, owing to his breeding and conformation, cannot be expected to reach the same standard of training as the better balanced and lighter riding horse; but the better he is trained as a rider, the handier he will be in a team.

2. The principles laid down in Sec. 58, 10, 11 and 12 are just as important in training the horse to draught as in his remount training. Even with the quietest horses instruction must be gradual and continuous to produce the trained draught horse. The men employed on this work should be those with most experience of horses.

II. STAGES OF TRAINING

1. **First Stage.**—The trainer puts a set of lead harness on the horse, crosses the traces over his back and ensures that the ends are secured to the breast collar so that they cannot slip off. He then leads the horse quietly about. As soon as the horse is quite quiet in this harness, he adds a breeching.

2. **Second Stage.**—An assistant holds the ends of the traces, if necessary using some rope to lengthen them. The trainer leads the horse forward. The assistant at first applies no weight to the traces, but gradually accustoms the horse to their feel when they touch his legs. As soon as the horse is quiet with the traces, the assistant gradually applies his weight to them, starting very gently until the horse pulls steadily and strongly, and then slowly increasing the strain. It is essential that the first application of weight should be light so as to teach the horse not to fear the breast collar.

3. **Third Stage.**—The horse is hooked into the off-centre of a quiet trained team. The centre driver should be the best trainer available. He should keep his whip in his legging

and do all the early whip work with his right hand only, bringing it (and later on his whip) to the horse's neck from the rear, *i.e.* over the horse's back, so as to avoid frightening him.

At the halt, before moving off, the centre driver should make much of the remount. The team should then move off quietly at a walk, the centre driver encouraging the remount to move by his hand on the neck. A man should be standing by on foot ready to lead him forward if he does not move off with the rest of the team. At first the team must move on a straight line or turn on big circles, to avoid any danger of a leg over the traces due to the remount not being up in his collar. This stage must be continued until the horse is thoroughly at home at the walk and trot and answers the whip aids which have been gradually brought into use according to the progress made.

4. **Fourth Stage.**—The horse is put in the ride centre.

5. **Fifth Stage.**—i. In the case of a leader the horse should be put in the ride-lead and, when trained there, put in the off-lead. The success of his training as an off-leader will depend on whether he has been accustomed when in the off-centre to the whip on his neck and has learnt what its application means.

ii. In the case of a wheeler the horse should be put in the off-wheel and the team taken down slopes with a man at the brake. The horse is gradually accustomed to hold the carriage by easing the brake and slowly increasing the weight on the breeching.

6. If the remount, when off-horse, is inclined to bring his head in towards the driver, a side rein should be put on. This will necessitate a pad or saddle on his back.

APPENDIX IV

PREPARING A HORSE FOR DRIVING WITH
LONG REINS FROM THE BOX

1. **First Stage.**—The horse is driven in harness, the trainer being on foot. If blinkers are to be worn, great care must be taken in fitting them to see that they do not rub the horse's eyes and are comfortable to him, and particularly that they do not allow him to see rearwards through them. When the horse answers the reins satisfactorily, the traces, lengthened if necessary by rope, are held by a man on foot, who gradually puts weight on them (*see* Appendix III, Sec. II, 2).

2. **Second Stage.**—The horse is hooked into the vehicle. The trainer then quietly mounts the box and the horse is led about by a man at his head. If the horse shows any dislike to moving, the wheels should be gently and equally manned to assist him in his first move. At first the direction should be straight and, when turns are necessary, they should be very gradual. The normal difficulty experienced at this stage is in the turns. The horse has got to become accustomed to the pressure of the inside shaft when turning and, to ease this in the early stages, the man leading should either pull or push the shaft nearest to him to assist the turn. Leading should be continued until the horse turns freely without any assistance on the shafts. If the turning aids are applied from the box at this stage, the horse's head is pulled round for the turn and he meets the pressure of the shaft and resents it; the continuity of quiet training then suffers a definite set-back which often takes some time to eradicate.

3. **Third Stage.**—Begin the aids from the box and, as progress is made, the man leading the horse on foot gradually leaves off his aids.

4. **Fourth Stage.**—When the horse is trained to single draught, he can be put to pair draught. He should be started alongside a trained horse. The greatest care must be taken that the couplings are so fitted that both horses travel with their heads straight to the front.

5. If required for a coach, the horse trained systematically and successfully as above is ready to go into any position in a trained coach team.

APPENDIX V

LOADS AND PACE OF ANIMAL TRANSPORT

i. <i>Loads.</i>					lb.
(a)	Pack mules and ponies	...	...	...	160
(b)	Camels, heavy	...	...	...	350
	Camels, light	...	...	...	250
(c)	A.T. cart with two animals on hill roads				640
(d)	A.T. cart with two animals in plains (10 maunds)	...	...	...	800
(e)	A.T. cart with two bullocks on hill roads				800
(f)	A.T. cart with two bullocks in plains	...			960
(g)	Pack elephant	...	...	...	1,200
(h)	G.S. wagon with team of four mules	...			3,000
(i)	Wagon and span of 16 oxen	...	...		5,000

These loads are exclusive of the weight of unexpended rations and of gear.

ii. <i>Pace.</i>					m.p.h.
(a)	Bullocks, draught	...	...	...	2
(b)	Bullocks, pack	...	...	...	2
(c)	Camels	...	...	...	2
(d)	Pack and draught mules and ponies	...			3½
(e)	Elephants	...	...	...	3

These paces need to be modified in hill country and over bad roads; they are the rates of marching of unescorted convoys.

APPENDIX VI

METHOD OF ASCERTAINING THE NUMBER
OF CAMELS REQUIRED FOR A CONVOY.

i. Take the total weight in lb. of the rations required for one camel, and its share of its driver's rations, during the period of the convoy.

ii. Subtract this from 350 lb. (the load of a heavy camel).

iii. Divide the result into the total weight to be delivered by the convoy.

iv. The result is the number of camels required for the convoy; add 20 to 30 per cent. spare to this total for prolonged operations (these animals carry their own and their drivers' rations).

2. *Example.*—Assuming that a convoy is required to deliver 10 days' rations for a column of 1,600 troops and 500 camels and their drivers, at a distance of seven days' march; during the march the longest spell without water is three days.

Calculation.

i. Each camel requires seven days' rations; $= 10 \times 7 = 70$ lb.

and must carry a half-share of his driver's rations; $= 1 \times 7 = 7$ „

also half of three days' water for his driver (whose allowance is two gallons)
 $= (1 \times 10 \times 3) + 25$ per cent.
 weight of fantasse $= 37\frac{1}{2}$ „

Total $114\frac{1}{2}$ „ say 115

ii. $(350 - 115) = 235$ lb., the useful load for each camel.

iii. *Total weight to be delivered :—*

Rations for 1,600 men for ten days $= 1,600 \times 6 \times 10 = 96,000$ lb.

Rations for 500 camels and drivers for ten days $= 500 \times 21 \times 10 = 105,000$ „

Total $201,000$ „

iv. Number of camels required

$$\frac{201,000}{235} = 855 \text{ camels}$$

Add 25 per cent. 215

Total camels required 1,070

These animals would be provided by the animal transport companies of the force by allotting the required number of complete troops or sections.

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